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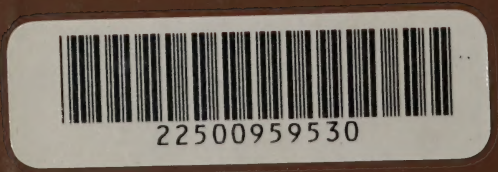

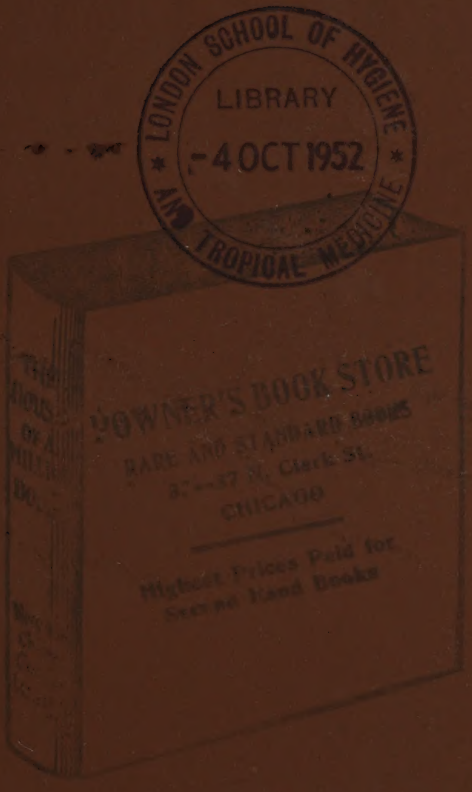
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PUBLIC HEALTH

PAPERS AND REPORTS

VOLUME VIII

PRESENTED AT THE TENTH ANNUAL MEETING OF THE

American Public Health Association

INDIANAPOLIS, IND., OCT. 17–20

1882

WITH AN ABSTRACT OF THE RECORD OF PROCEEDINGS

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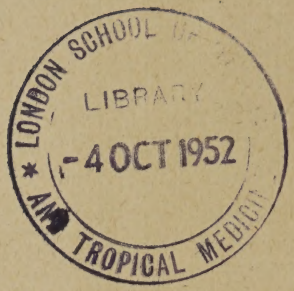

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SECRETARY'S INTRODUCTORY NOTE.

THE Eighth Volume of the Transactions of the Association is herewith presented to the members. The third edited by the present Secretary, and as it will be the last, it is hoped and believed that the efforts made herein to secure simplicity with uniformity of style and method may commend themselves for future numbers, and that both the material and make-up of the volumes that may follow may rightly represent an equal advance in valuable work and membership. Perhaps no part of this and the last volume will find more ready appreciation than the faithful *verbatim* reports of the discussions; and as these are clearly becoming a more important feature of the sessions of the Association, and give to the world most clearly the individuality of the members and their views, it cannot be too strongly urged that these reports be well provided for in the future. That more stringent rules in regard to the reception and publication of matter by the Association are imperatively demanded is most clear, if the high standard early aimed at for our Transactions is to be maintained, or, indeed, if simple truth is to be taught. Trusting that the leniency granted all imperfections may be in proportion to the pleasure the work has afforded the Secretary, it remains for him only to say — Vale!

TABLE OF CONTENTS.

TENTH ANNUAL MEETING.

PAGE

SECRETARY'S INTRODUCTORY NOTE III

THE PRESIDENT'S ADDRESS. By PROF. R. C. KEDZIE, of Lansing, Mich. . . . 1

ADDRESS OF GOVERNOR A. G. PORTER, of Indiana 14

ADDRESS OF MAYOR D. W. GRUBBS, of Indianapolis 15

LAWS REQUIRING MEDICAL MEN TO REPORT DEATHS AND CASES OF INFECTIOUS DISEASES TO THE PUBLIC AUTHORITIES. By DR. O. W. WIGHT, of Detroit, Mich. 17

SANITARY GOVERNMENT — PRINCIPLES AND FACTS. By HON. ERASTUS BROOKS, of West Brighton, N.Y. 23

SANITARY INSPECTION. By DR. A. NELSON BELL, of New York 34

THE RELATIONS OF HEALTH ASSOCIATIONS TO THE PRACTICE OF MEDICINE. By DR. JOHN J. SPEED, of Louisville, Ky. 39

THE NEWPORT (Edinburgh) SYSTEM OF SANITARY PROTECTION. By DR. HORATIO R. STORER, of Newport, R.I. 42

A HISTORY OF HEALTH-WORK IN INDIANA. By DR. THAD. M. STEVENS, Secretary of the State Board of Health of Indiana 63

WORK OF THE STATE BOARD OF HEALTH OF NEW YORK. By HON. ERASTUS BROOKS, a member of the Board 68

A REVIEW OF THE OPERATIONS OF THE NATIONAL BOARD OF HEALTH. By the President, DR. J. L. CABELL, of Virginia 71

THE IMMIGRANT INSPECTION SERVICE OF THE NATIONAL BOARD OF HEALTH AT PORT HURON, MICHIGAN, AND ITS BEARING ON THE PUBLIC HEALTH OF THE WEST AND NORTH-WEST. By DR. H. R. MILLS, of Port Huron, Mich. . . 102

A SUMMER EPIDEMIC OF SMALL-POX CAUSED BY DIRECT IMPORTATION FROM GERMANY. By DR. A. W. CANTWELL, of Davenport, Ia. 107

SMALL-POX IN BETHLEHEM, PENNSYLVANIA, AND VICINITY, IN 1881-82. By DR. JOHN W. DETWILLER, of Bethlehem, Pa. 111

USES AND ABUSES OF ANIMAL VACCINATION. By DR. SAMUEL W. ABBOTT, Health Officer of the State Board of Health of Massachusetts 114

PROPOSITIONS CONCERNING VACCINATION. By DR. JAMES F. HIBBARD, of Richmond, Ind. 123

PAGE

Observations on Texas Cattle. Age, Weight, Temperature, Liver, and Spleen. By Dr. Joseph R. Smith, United States Army 125

Stock Transportation. By Dr. E. E. Holman, of Chicago, Ill. . . . 137

Life on Wheels. Its Sanitary Needs. By Dr. T. P. Wilson, of Ann Arbor, Mich. 142

Large Combined Sewers Dangerous to Public Health. By Dr. J. W. Compton, of Evansville, Ind. 146

The Cremation of Excreta and Household Refuse. By Col. J. M. Keating, of Memphis, Tenn. 150

The Sanitary, Physical, and Educational Advantages of Interior Open-air Areas in Large Cities. By Dr. T. Newell, of Providence, R.I. . 155

Is Tubercular Consumption a Contagious and Parasitic Disease? By Dr. Bela Coggshall, of Flint, Mich. 164

The Negro Mortality of Memphis. By Dr. G. B. Thornton, President of the Memphis Board of Health 177

Record of Proceedings and Discussions at the Tenth Annual Meeting . 187

REPORTS OF COMMITTEES.

Report of Committee on National Museum of Hygiene 327

Report of Committee on Venereal Disease 329

Minority Report of above Committee 334

Report of Committee on Management of Epidemics 336

Report of Committee on Vital Statistics 339

Report of Committee on Compulsory Vaccination 342

Report of Committee on Necrology 343

Treasurer's and Auditors' Report 349

Amended Constitution 350

Officers and Committees, 1882–83 353

List of Members Elected at Tenth Annual Meeting 356

I.

THE PRESIDENT'S ADDRESS.

By Prof. R. C. KEDZIE, M.D.,
Of Lansing, Mich.

Members of the American Public Health Association: — Once more we meet in annual council to consider questions which intimately concern the weal — the literal wealth — of our common humanity. In this council political lives and sectarian differences are swept aside like the foam on some mighty river, while the current of the forces which tend to purity, to safety, to health and life of all who are exposed to pain, to sickness and death, moves on with the unswerving and resistless sweep of destiny. We come from distant States and widely separated communities, each with his individual ideas, cares, and anxieties, but all with a common purpose to subordinate personal preferences to the general good, and, above and beyond all selfish interests, to place the welfare of the community.

But as we thus meet, with clasp of hands and words of mutual welcome, there is a shadow on your faces as the thought continually obtrudes itself that we are not all here. Since we last met, Death has taken from us one of our brightest and best beloved, — our President of one year ago. You had all observed with unspeakable pain the evidence that to him life was not to be long, yet, when the news of his sudden death came, it brought a shock to us all. While his life was short as measured by years, it was long when measured by the deeds done for the good of man. "That life is long which answers life's great end," and who of us can show a brighter record of unselfish devotion to the well-being of his race than Dr. Charles B. White? As physician in the Crescent City, as President of the Louisiana State Board of Health, as Medical Director of the Auxiliary Sanitary Association of New Orleans, — a city presenting more difficult problems to the sanitarian than any city within our borders, — and finally as President of this Association, Dr. White manifested everywhere and at all times a devotion to the public weal, and a capacity to promote its interests excelled by none.

As evidence of the esteem in which he was held in the city of his adoption, I quote the following tribute to his memory from the New Orleans "Picayune:" —

"New Orleans could ill afford to lose such a man as Dr. C. B. White. He was, as Mr. Whitney said in his beautiful address to the Sanitary Association, 'a good citizen, an able physician, and a noble man.' No man ever thought and studied more over the good of his city than Dr.

White did over New Orleans, and no man stood higher in the United States as a sanitarian than he, — a fact proved by his election as President of the National Health Association. The people who stood around his coffin were an honor to his memory, and testified to his place in this community; they were composed of the learned men of the city, — our leading ministers, physicians, lawyers, and financiers. He was such a good physician; he was so gentle, and generous, and kind, and during the days when his body lay waiting in the hushed darkness for the brother to come from the West, not an hour passed that some person did not steal in at the crape-hung door to look with wet eyes on his face. Sometimes it was a rich man, sometimes a poverty-stricken woman, sometimes a wrinkled old negro; but they passed in a long procession, like living records of the skill and wisdom and never-ending generosity that had filled his life with good and noble deeds. A choir of men's voices sang at his funeral the Doctor's favorite hymn, and at the last line their voice faltered and broke down, and then, in addition to this touching tribute, his minister said to some one, after the services were ended, 'He had lived beyond all philosophies; but with all his learning he came back in the last weeks of his life to the 'Rock of Ages.'"

So busy was he in working and planning for the good of others that Dr. White could not find time to die; but death literally tore him from his work. From his chosen home in the far-off South loving hands brought him tenderly back to the old home of his boyhood, to lay him down to that dreamless sleep whose waking is immortality. REST THEE, loyal Knight-errant of God!

A few others of our number have fallen in their places, — Jenkins, Mussey, and Gibbs have gone to their reward, — of whom the Committee on Necrology will make fitting mention. Death has entered our ranks but seldom during the year, but its blows have been heavy.

THE OBJECTS OF SANITARY SCIENCE.

Sanitary science includes everything that can prevent disease, and thus promote the public health. The public health is not an entity apart and by itself, but is the aggregate of the health of the individuals of a community. Any means that will promote the public health will correspondingly increase the well-being of the largest number of individuals. "The subject of public sanitation," says Dr. Stokes, "which implies preventive medicine in its widest sense, as distinguished from curative medicine, touches every hearth and home in the country; every man, woman, or child, from the highest to the lowest; every institution in the State, its power, its defences, its manufactures; every trade, every occupation, domestic purity, domestic happiness, national property, national health, longevity, and morals; the duties of property, the exercise of charity, and the blossoming and the fruit of our common Christianity. Its end is to improve and to preserve man's body in the best condition, and through it his immortal part. 'The body of man,' says Dr. Ackland, 'is not only the casket which contains the soul. It is more, — it

is a casket which, under certain conditions, moulds and modifies the soul. There is a class of persons, I am happy to say rapidly diminishing in number, who seem to be of the opinion that we, who are engaged in sanitary work, are somewhat fanatical; and that because it is connected with our material frame it is therefore a second-rate subject, fit only for inferior men. If I can read anything in the history of the globe it is this: that the great qualities of a people depend in large measure (except in rare instances) upon the physique of the nation. I appeal to all who have studied the philosophy of history, whether it is not the fact that some of the highest of human qualities have been shown in a most eminent degree in days when there was no systematic education, according to the modern notion of book-learning. So far as the comparative national health is concerned, I say there is no possibility of exaggerating the importance, not to our own country alone, but to the world, of fostering and caring for the body of man.'"[1]

These are noble words, and commend themselves to the judgment of all thoughtful men.

THE PENALTIES OF SCIENCE.

If the sanitarian is working for noble ends, by unselfish means, let him not, therefore, suppose that he will be exempt from the imputation of sordid motives, or that he will at once be hailed as the benefactor of his race. Human nature resents the assumption of moral excellence. There was once an excited election in Athens, when they were to decide by ballot whom they would send into exile, because of general dislike, and Aristides seemed to be the leading candidate. An ignorant but outspoken Athenian handed him a ballot, and asked him to write on it the name "Aristides." — "Has Aristides done you any wrong that you vote for his exile?" — "None, whatever; but I am tired of hearing him called '*the just*.'" The leading characteristics of the common man seem to have been developed early in the history of the race. "Every man's work shall be tried by fire, of what sort it is"; and he who acts from motives that seem a rebuke to selfishness will be subjected to the ordeal of a furnace heated sevenfold.

He will sometimes be associated with men who bring discredit upon the cause, for the reason that they do not, themselves, rise to the level of the greatness of the work. In the words of an eminent sanitarian: "Many modern sanitarians with but a smattering of knowledge, and with imperfect powers of reasoning, have done much to throw ridicule upon a great subject. But this was to be expected. In every department of human knowledge there have been, and still are, camp-followers of science, more ready to theorize than to investigate, whose dogmatism is only equalled by their ignorance, and who have adopted some special line of investigation without any previous training or discipline of the mind. These men, in the words of Curran, 'hop with airy and

[1] *Journal of the Royal Dublin Society.* 1875.

fantastic levity over fact and argument, and perch on assertion, which they call conclusion.'" — *Dr. Stokes.*

In the next place the good to be secured by sanitary science will be questioned and its benefits denied. As a sample of the scepticism which waylays scientific progress I present the following passage, which has been going the rounds of the newspapers: "In relation to the state and progress of human health, the improvement effected by science consists in a prolongation of the passive endurance of life, rather than an extension of the period of true vitality, or any increase of the opportunity for good work and real intellectual enjoyment. We may live longer, but our lives are neither happier, nor more useful, for the excessive energy recently devoted to the conservation of health, or the inordinate and laborious means taken to avoid disease and death. It may, doubtless, be possible to raise humanity to the level of one of those scientific toys, which approximate perpetual motion, but expend their whole force in moving themselves. Whether longevity, purchased at the price of passing a lifetime in running away from death, would be worth having, I must leave to be determined by the judgment of those who set a value on our so-called sanitary progress, which I, for one, fail to recognize. I think men were happier and better, and lived nobler lives, before the pursuit of health and the yearning for longevity became a craze, almost amounting to madness."

I make this anonymous extract in full recognition of the fact that it is easy for any person, by flippant and reckless assertion, to crowd into a few sentences an amount of falsehood that will require a long argument to entirely refute. An ink blotch may, in a moment, and by the rudest hand, be thrown on the spotless purity of a bridal robe, which will require powerful chemicals to remove, and the appliances of the laundry for hours to restore the dress to its former lustre. In spattering and spoiling, scepticism always holds the coigne of vantage. The destroying vandal is more than a match for creative genius.

DOES SANITARY SCIENCE SECURE LONGEVITY, NOT BY THE ENLARGEMENT, BUT BY THE ATTENUATION, OF LIFE?

Do not suppose that I shall attempt to prove the value of long life. In all lands and in all times it has been considered the chief blessing. "With long life will I satisfy him." "For length of days, and long life, and peace, shall they add to thee." Of wisdom it is said, "*Length of days* is in her right hand, and in her left hand (token of inferior value), riches and honor." But the superlative value of life, never to be mistaken for fear of death, is so ingrained in the heart of man that it needs no advocate, any more than morning requires a mirror to display the glory of sunrise. But to

> "Put day to day
> And count them all by seven,"

and thus spin out existence when all the light and joy of life are fled, is not the end proposed by sanitary science. It is rather to make existence

so full of life that the suicidal suggestion, "Is life worth living?" shall never enter the human soul.

A French writer has wittily said, "The health which is secured only by constant watchfulness is itself a kind of disease." There is here a happy combination of wit and error which is characteristic of French genius; but the statement itself is only a travesty of preventive medicine. The man that removes known causes of sickness and death exhibits the same forethought on these vital subjects that is demanded in every successful calling in life. A prudent man will give to the protection of health a care corresponding to that bestowed upon the preservation of property, or any other goods he may acquire or inherit; only, as other possessions are of less value than life and health, and are valueless in their absence, he will give more heed to things of highest importance. "Wisdom giveth life," said the wisest of earth; and he is not to be accused of folly who prizes this gift of wisdom. The man who builds his house in such way as to prevent the possibility of "a defective flue," and thus secures his household against nine-tenths of the alleged causes of fires, is not to be classed with the fellow, who, mousing around at untimely hours, awakens you with the exasperating inquiry, "Don't you smell fire?" The man who prevents disease is not to be mistaken for the valetudinarian, who spends life in dodging death.

Sanitary science rises to higher aims than petty contrivances to ward off special results. It strikes at causes rather than effects. In a leaky dwelling half-science is seen busily setting out pans and basins to catch the drip from the leaking roof, warning the occupants of the dangers from damp rooms and wet clothing. Sanitary science interposes with the word of authority: "Away with your slop-bowls, and send for shingles and a carpenter to put on a storm-proof roof!"—"Not so," says semi-science, "the roof does no harm; it is the water that comes through the roof that is the source of danger!"

Let us now turn our attention to vital statistics, to determine whether the advance in health and the enlargement of life is real progress, or only a hallucination of wild enthusiasts.

REDUCED DEATH-RATE.

The report of the Registrar General of England shows that the death-rate in twenty-three and a half years has been reduced twelve and two-tenths per cent. in urban, and eight and a half per cent. in rural, districts. This is a grand showing of the results of sanitary progress. Yet we are too apt to overlook the significance of these results, in relation to the improved condition of the people. We fix our eye upon the inanimate figures, and do not see what lies deeper than the figures, — the joy and happiness which flow from this expansion of life, and which require the scientific imagination to perceive and value. But these estimates of the Registrar General relate to human life in gross, and give us no comprehension of the condition of the different epochs of life. Life may be drawn out into attenuated helplessness, without any increase of human happiness.

By a study of the reports of the Registrar General of England for forty years I find that the number who complete adolescent life by surviving the twentieth year has been increased twelve and sixth-tenths per cent. in forty years; and that the number who enter adult life, and pass from twenty to thirty-five years, has been increased twelve and two-tenths per cent. In other words, in a given population, where eight persons passed from childhood to manhood, forty years ago, more than nine now join the ranks of productive manhood; where eight persons survived fifteen years of active toil, nine persons now attain the same age. The waste of life in childhood is checked in part, and these saved from premature graves, with all its measureless woe, have been added as joyful recruits to the reapers in life's harvest. This is something vastly more significant than a mere extension of life in gross: it is an addition in particular to that period of existence when the real work of life is done. If to relatively diminish the number of non-producers by bringing a larger proportion to the producing age is worthy only of a sneer, then it is difficult to say what achievement in human progress is worthy of commendation. By thus laying her guiding hand upon those wide-reaching forces and causes which mould human destiny, sanitary science has inaugurated a revolution in human society as pervasive, yet as silent, as the dawning of the morning, which comes "with healing on its wings."

When we look at the influence of sanitary science in removing the causes of death we find the same evidence of progress. Take the zymotic diseases, which may affect every age, and against which the robust are scarcely more protected from attack than the feeble. They are the "destruction which wasteth at noonday," as well as the "pestilence which walketh in darkness." Two hundred years ago small-pox was the cause of death of ninety-six out of every one thousand deaths in England, and sixty-six and one-half out of every one thousand deaths in Germany. Now the mortality from small-pox is less than one in one thousand. Sanitary science has thus saved ninety-five deaths in every thousand in England, and sixty-five and one-half in Germany. The saving of life by vaccination every year is equal to one-tenth of the standing armies of Europe. In Mexico three and a half millions perished by one visitation of this fell disease. If one hundredth part of this number should now die in any nation by a single epidemic, the world would stand aghast in horror. The black death that slew twenty-five millions in Europe is a thing of the past, and will never again be possible until sanitary science is forgotten.

Other diseases, supposed to be less amenable to the control of science, have been checked, if not exterminated. Within thirty years the number of deaths from typhus, typhoid, and continued fevers has been reduced more than one-half. These destroyers of life are kept at bay only by the unremitting exertions of science. When science shall push into still wider fields of research, and shall fully reveal the germs which cause measles, scarlet fever, diphtheria, and consumption, and shall provide a method of inoculation, or discover germicides, which shall protect the

race from their influence, what tongue of prophet or harp of evangel shall portray the future life of the race!

I have no patience with the cold cruelty of semi-science, which calmly contemplates the preventable sickness and death, and hails these as weeding and pruning processes by which to make the race better and stronger. If only the weak and puny were taken away there might be a cold-blooded force in such reasoning; but we find the strong and vigorous smitten down along with the weak and helpless. It is not the worthless and the wicked alone that are weeded out by death. The pistol-shot which may arrest the burglar may also smite down a Lincoln and a Garfield. Small-pox and diphtheria may sweep away the lowest, and yet not spare the highest, in social rank. The typhoid fever which may smite the beggar in his hovel may also slip into the royal palace, to lay its withering touch upon the heir to the throne. It is not reserved for human wisdom to decide who shall live and who must die in order to subserve the highest interests of the race. It was a murderer, and to conceal his murder, who first raised the doubt, "Am I my brother's keeper?" Preventable sickness unprevented is a crime against society; preventable death not prevented is a crime against God.

POSSIBILITIES OF HUMAN LIFE.

When we look at the lower forms of life we find that, under the guiding and fostering hand of man, they have reached a degree of development and attained a length of life not reached in their natural state. This has been well pointed out by Dr. Jarvis, in his article on "The Political Economy of Health." Compare the Durham ox of to-day with the stump-tailed steer of last century; the dairy quality of our best breeds with the scrub-cows of the past. The weight of dressed carcasses and the quantity of dairy products have been more than doubled, to say nothing of their improved quality. The sheep in "the good old times" of one hundred and fifty years ago would furnish twenty-eight pounds of dressed carcass, and shear two pounds of hair-like wool. The improved sheep of to-day will dress eighty pounds, and shear eight pounds of wool with a texture like silk. Look at the speed and endurance of the horse, developed within a century. You all remember the time when a horse that could trot a mile in 2.40 was a wonder. Some twenty-five years ago, when Flora Temple, at Kalamazoo, trotted a mile in 2.19, the excitement was like that over some national victory. Yet the mile-time has been brought below 2.11, and we have horsemen who will never rest satisfied till they have brought the time below 2.10. Contrast the long-snouted, razor-backed hog of the "good old times," with the Essex and Suffolk of to-day. In the vegetable world the rate of development is similar. Compare our golden pippins with crab-apples; the melting Doyennes with Choke pears; luscious Crawfords with the leather-bound peach-stone from which it sprung. There is not a fruit or vegetable we eat, a grain we sow, a fabric we wear, or a

flower we cherish, that has not been transformed and glorified by the cultivating and guiding hand of man.

The objection may be raised that these conditions of extraordinary development are unnatural, and that plants and animals thus raised above their natural level will revert to a lower development when left to themselves, and hence the excellence of their present condition is entirely factitious. It is enough to reply that by the same argument we may prove that life itself is unnatural; that living beings, left without extraneous help, soon revert to inorganic matter; that the great mass of all material things is dead matter, — the stars which people space, the earth under our feet, the air above us, and the ocean which heaves and palpitates like a thing of life, — ALL DEAD, with only here and there a living point. All the forms of life we see about us, which to our eye seem to fill the earth to repletion, are only the thinnest film covering the body of dead matter, — the bloom on the plum, which the lightest touch wipes out forever! Yet life is none the less real and natural. The excellence in life is as real as the living itself; but, like life, it has its price, and is not secured and maintained without effort. But it is only by a superior intelligence that this is produced, and not by the action of innate causes. Dr. Jarvis forcibly says: "Beyond the pale of man's intelligent aid life is apparently stationary. So far as human observation has gone, the wild, uncultivated plants, the trees of the forest, the grass of the meadows, the flowers of the untouched wilderness, the fishes of the sea, the birds of the air, insects, reptiles, wild beasts of the desert, left to their own instincts, are no larger nor stronger; they have no more vital force or longevity than in the beginning of their race on earth." —*Report of State Board of Health, Mass.*, 1874, p. 359.

The improvement of all the lower forms of life, both animate and inanimate, has been the result of direct interference on the part of man. If man would give a corresponding attention to the development of his own race, by careful attention to the laws of heredity and a wise control of his environment, might not as striking results be secured in human development as already have been secured in stock-breeding? The complete realization of this is hardly to be expected, for classic mythology informs us that Love was born blind, and no oculist has yet been found with the skill to give him vision. But the environment is within man's control, and he may thus secure that "continuous adjustment of internal relations to external conditions in which healthy life consists."

Human life, as at present seen, is not like a goblet filled to the brim, to which any addition is to be compared to piling fluid upon fluid in unstable equilibrium, liable to sudden overflow, all the more imminent as the accumulation proceeds. It is rather a half-filled bucket, whose staves are so imperfectly compressed by the loose-fitting hoops that leakage, not overflow, prevents further accumulation. The sanitarian seeks to tighten the hoops, and thus secure filling to the normal capacity, so that man may fill the measure of his days, and not be defrauded of the precious years of his earthly heritage.

THE OUTLOOK OF SANITARY SCIENCE.

When persons are engaged in any enterprise involving a multiplicity of details, so that the immediate particulars fill the eye to the exclusion of any view of the work as a whole, it is often a help to the weary worker to pause long enough to grasp the outlines of the field of endeavor, and to note the signs of progress, and thus take heart for new work, or to note the points where failure is seen, in order to direct effort where best results may be secured.

With reference to preventive medicine we may appropriately utter the challenge of the old Hebrew bard, "Watchman, what of the night?" and, as in the days of old, comes back the response, "The morning cometh, and also the night," — signs of encouragement and cheer for the race, like the breaking of the morning after the long night of woe; also signs of discouragement and failure, like the sable wings of night, which shut out the sun of prosperity and cover the stars of hope. But this is the history of human progress in every field and for all time. No army with widely extended front ever marched with even pace to victory, without check or temporary defeat in any of its divisions. The same is seen in all of Nature's processes. Spring comes, not with serene and even-paced advance, but often with sudden leaps and wild recoil. Niagara surges onward with resistless flow; but here and there are eddies and refluent waves which would make us believe that the river is flowing backward to its source. But, in spite of delay and momentary defeat, substantial progress is made; the chills and storms of spring do not prevent the summer; the swirls and counter-currents of the river do not arrest its march to the sea. When we look at the evidences of advancement in the prevention of disease, and in the promotion of the general health, we find frequent occasions for devout thankfulness.

Among the causes for hopefulness for the immediate future I name the following: 1. Extension of the knowledge of the causes of zymotic diseases, such as charbon (or splenic fever) and chicken cholera in domestic animals, and of diphtheria in human kind. All infectious and contagious diseases must soon be brought into the same category when we shall know and identify the specific cause.

2. The prevention of these diseases by extension of the method of inoculation. This has been done in some diseases of domestic animals. If, by similar means, measles, diphtheria, and scarlet fever, can thus be brought under control, and priceless childhood be rescued from this trinity of woe, how many a Rachel, now weeping beside her childless cradle, will be comforted!

3. The discovery of the bacillus, which is the cause of consumption, by Dr. Koch, of Berlin, marks an epoch in the history of medicine. Tubercular consumption has been the opprobrium of medicine. It is the remorseless destroyer of our race, — being the cause of one-seventh of the deaths of our race, and of one-third of the deaths in the active period of adult life. It has sown the earth with untimely graves. It is yet too early

to say how much immediate benefit shall spring from this capital discovery; but any means which shall bring within our control, even remotely, this fell destroyer of our race, is full of promise. If science shall stretch forth only the hand of prevention, what a boon to our kind! If it shall finally reach forth the hand of healing and guard mankind from consumption, as effectually as she has saved us from small-pox, or the lower animals from splenic fever, what a shadow will be lifted from the face of our common humanity!

4. Another element of hopefulness is the world-wide interest now taken in questions of public health. In centuries past, history tells us of the gathering of ecumenical councils, where met the representatives from all the civilized world to consult on questions of momentous religious interest, and to decide upon the great affairs of the church. Modern times see the gathering of similar councils, of equally wide-spread constituency, to consult about questions of temporal salvation and conservation of the public health. What would the seventeenth century have thought of a World's Health Congress, with representatives from every nationality in Europe and America? The warlike races are beginning to ponder the question of Christ, "Is it lawful to save life or kill?" and to suspect that *to kill* is only half of the duty of a great nation, and that *to save life* is nearly as important. It is certain that national bigotry has been compelled to give place to amicable restrictions and concert of action for restraining disease. The saviors of our race shall yet be as honored as its destroyers have been.

5. In our own land the sky is bright with promise. The organization of so many State Boards of Health, — and we greet with hearty welcome Indiana, who has lately joined this sisterhood of the Order of Mercy! — so many State Boards have been organized that now we count up to see how many States have no Board, instead of enumerating the number who have. The work of these Boards has been silent as the light, but quickening as the sunbeams. Some State Boards, like Illinois and West Virginia, — may their tribe increase! — have cleaned out the profane and ignorant crew who, for paltry gain, would experiment and trade on the lives and health of men. The homes and the bedsides of the weak and suffering have been saved from the clutches of these harpies. Blessings on the law which holds the benignant shield of its protection over the suffering and sorrowing, shielding them alike from ignorant greed and artful cunning! The work done by all these State Boards, in investigations of the relations of remote causes to the public health, — moisture and dryness, heat and cold, ozone and electrical conditions, etc., etc., — the dissemination of information on all these questions relating to public health, so that when some terrible epidemic fills a village with wild wailing, high above the din and clamor of grief rises a clear voice, demanding in tones not to be silenced, *Who will tell us the cause of this, and how to remove it?* So, also, the sanitary conventions to enlist all parties in the discussion of questions relating to public health, and to spread information on these literally *vital* questions; in short, to enlist humanity

in a crusade against disease, bearing aloft no blood-red battle flag, but lifting up the banner with the white cross of HEALTH!

Other organizations in the interest of health, without number, have been formed, — required by law, or voluntary in their organization, the jurisdiction confined to a city or village, or including a large territory. Some of these organizations have effected wonderful results, and their combined influence is beyond human calculation. Foremost in these voluntary organizations I place the Sanitary Council of the Mississippi Valley. Without funds or patronage, without authority to command a single individual, with no power save the high purpose and courage to do good, and the confidence which such qualities inspire, the Council put down shot-gun quarantine, and for the past two years has kept the valley of the Mississippi open to commerce and travel, but closed against the pestilence.

DISCOURAGEMENTS.

Let us now turn the leaf, and look at some of the discouragements: —

1. There is so much to be done, and so few to do. Lift up your eyes to the redemption of the world from avoidable disease and premature death, and behold the fields are white for the harvest, but the laborers are so few.

2. A few who profess to be reapers are wasters. They care little for the precious grain, but want the straw to make themselves a nest. With great volubility they point out the fact that the largest part of the harvest is straw, and insist that to waste so much good straw, which will make them a nice, warm bed, merely to save a little grain, is unconstitutional waste, and an invasion of reserved rights! This was to be expected. Eden had its serpent, with his plausible suggestions of profit to be secured by wrong-doing. Christ found his Judas, whose eye was ever on the purse; and our own Revolution had its Benedict Arnold, willing to sell out struggling right for personal profit.

3. A third cause of discouragement is found in what may be called the hostile indifference of Congress and the Executive to the National Board of Health. The American Public Health Association and the Sanitary Council of the Mississippi Valley were active in securing the organization of the National Board of Health. Both the Association and the Council are firm believers in the need — aye, the vital necessity — for a National Board of Health, whose jurisdiction shall be coterminous with the national boundaries, backed by national authority, and sustained by the national purse in its holy warfare upon communicable and preventable disease. States' rights may glitter and splutter upon trivial questions of politics; but disease will not pause at State lines, nor halt at municipal boundaries. When destruction takes on winged form, and comes floating on the very winds to lay waste our heritage, then we want some power whose jurisdiction shall be as wide-reaching as the wings of the destroyer, and shall command every force and resource requisite to withstand the invading foe. Look at the situation. Small-pox has been

pouring in with the flood of European immigration, and but for the timely action of the National Board of Health, and the efficient aid of a few State Boards of Health, the north-west would have been one widespread hospital for small-pox, and the commerce of this vast region closed for a time. Yellow fever has been flickering like the baleful fires of the tomb along our gulf borders, and lately has blazed up with an epidemic, destroying life, wasting large communities with sickness, and crippling the commerce of our gulf coast, inflicting a money loss exceeding tenfold the entire cost of the National Board of Health, to say nothing of the suffering and death thus entailed.

When we look to the future the prospect is not reassuring. The same destructive agencies will continue to work in the future as they have in the past. When we turn our eyes to the East we find additional cause for apprehension. Cholera has roused up from its lair in the jungles of India, is now laying waste the islands of the Indian Ocean, and will soon start on its sweep westward to lay waste Europe, to charge across the stormy Atlantic, and, like its predecessors, to die out in the valley of the St. Lawrence, or along the banks of the Mississippi. Is this a time to withdraw the watchmen who guard the public safety; to call in our trusty picket line, and hope to meet the destroyer with the *fulmen brutum* of States' rights, or the guerilla warfare of isolated municipal action?

The painful conviction abides with us that a fearful blunder has been made in thus crippling the National Board of Health, and that we have been guilty of the folly of changing front in presence of the foe.

We thus see that light and shadow alternately flit across our landscape; but the light grows stronger and the shadow less sombre. But we should remember that, whether in sunshine or in shade, *the landscape still remains*. In health or in sickness, in pleasure or in pain, the race moves on forever, keeping even step with the noiseless footfalls of time; that whatever we may contribute towards improving the condition of our race will be a permanent addition to the welfare of our kind, while our errors and mistakes, like dead leaves and useless chaff, will be mercifully buried in our graves. We are now painfully and wearily sowing the seed, but the generations to follow us shall reap the joyful harvest. Because we are only sowers, and because we shall never thrust in the sickle of the reaper, let us be only the more careful to scatter precious seed. Though our eyes shall never behold the sheaves of that far-off summer time, our ears may yet catch the echoes of their harvest song. Listen to the refrain: "There shall be no more thence an infant of days, nor an old man that hath not filled his days; for the child shall die an hundred years old." In the ages past how large a proportion of human beings were ushered into existence whose life was measured, not by years or months, but were literally *infants of days!* By the advancement of sanitary science and the stricter enforcement of sanitary law, the proportion of infants of days has been steadily diminished, and a constantly increasing number pass on into adult life. Year by year and age

by age a smaller number die in infancy and a larger proportion pass forward to productive manhood. With wider knowledge and more general enforcement of sanitary law this diminution of infant mortality and expansion of human life will go forward with ever-increasing momentum, till life will attain its normal limits, and every child shall reach his hundred years. Not only will life be extended, but the long life will be full of joyful activities, and man shall *fill his days*. For this we toil and hope. God speed the day!

II.

ADDRESSES OF WELCOME.

By GOVERNOR A. G. PORTER, of Indiana, and MAYOR D. W. GRUBBS, of Indianapolis.

Governor A. G. Porter addressed the Association as follows: —

Mr. President and Gentlemen of the American Public Health Association, — To see the most intelligent members of a profession, whose income is derived from fees for curing diseases, assembled to consider, with real earnestness, the most efficient means of preventing disease, is an inspiring spectacle. An Association formed for such a purpose should be warmly welcomed alike by the State and by the municipality in which it is met.

It is said that the prevention of disease is to be attained by avoiding or removing causes of disease, and by making the body less susceptible to these causes. To avoid or remove these causes the interposition of State or municipal regulations is often indispensable. The spread of contagions or epidemics cannot, ordinarily, be arrested by merely private agency. Municipal or State authority must be exerted to secure efficiency. Quarantine regulations, sewerage, drainage, disinfection, isolation, the construction of buildings in populous districts with reference to ventilation and an exclusion of noxious gases, and other measures of like nature, must be adopted and enforced.

The extent to which the rise and spread of diseases have been prevented by the application of a knowledge of sanitary science furnishes a high incentive to continue efforts so successfully begun. Intelligent work in this almost limitless field is of very recent origin. Before an efficient beginning was possible, the superstition that diseases are of supernatural origin had first to be confuted and to be replaced by the theory, supported by the best observation, that Nature is a friend to all those who obey her laws, or who, having violated them, strive to return to obedience. This fact has begun to be so well recognized that it has been justly said, that the enlightened physician, before the administration of drugs, will usually look for the presence of any deleterious agencies or unremoved causes of disease. Little has been attained toward the prevention of diseases compared with the infinite amount yet to be attained, but the efforts made have been crowned with the saving of a countless number of human lives and a great amount of human suffering. In the work which has been accomplished, the efficient aid rendered by the American Public Health Association has been recognized by the most authoritative writers. The Association has been specially efficient in im-

pressing upon the people the necessity of public efforts toward prevention, and therefore, in a great majority of States, State Boards of Health have been established by the Legislatures. It gives me pleasure to say that Indiana is one of those States, and that the law creating the Board is sufficiently complete in its provisions to enable the Board to do much good. The law has, however, so recently come into force, that time enough has not yet elapsed to give it full efficiency.

It gives me pleasure, also, to say that the practice of underdraining the soil has, in this State, been found so greatly to increase its productiveness that, in proportion to the area of the State, it is said we have more underdrained soil than any of the States. Underdrainage has everywhere been followed by a great lessening of sickness; and intermittent fever, once so common, has become so rare that it is a good deal less prevalent than in some of the oldest of the States. Our laws relating to drainage have been recently much improved, and a disposition to relieve the soil in every portion of the State of all excess of moisture, tending to lessen its productiveness and to bring on sickness, is everywhere evident.

Although in the beginning of these remarks I have referred especially to the disinterested earnestness of the physicians here met, in studying how best to prevent disease, I am not unaware that some of the most efficient members of your Association are not members of the medical profession. It is also true, I know, as admitted by the best writers, that some of the most valuable suggestions with respect to sanitary measures have been furnished by persons not connected with the profession. There are in every profession certain limitations which always render non-professional coöperation in all efforts toward progress and reform of real service. In addressing you on behalf of the State, I have dwelt especially upon the valuable suggestions made by you for efficient public efforts to prevent the development and propagation of diseases. I am not ignorant, however, of the not less valuable aid which you are rendering in suggesting means of private prevention.

I welcome you, gentlemen, to this State, on behalf of its citizens, with earnest cordiality, and ardently hope that you will at this session of your Association add much to a knowledge of the means by which sickness may be prevented, physical suffering diminished, and human life prolonged.

Hon. D. W. Grubbs, Mayor of Indianapolis, spoke briefly as follows: —

Mr. President and Gentlemen, — As Mayor of Indianapolis, and on behalf of the people I represent, it affords me great pleasure to welcome you to this city. An Association of this kind, composed of men of scientific attainments, who have voluntarily left their homes and forsaken their daily pursuits for the purpose of consulting together for the benefit of a common humanity, is one of the grandest spectacles of the age. At this day there is nothing of more importance to the people, or more interesting to men of science, than the investigation of the causes of disease,

and the origin of epidemics and contagions. In all large cities it has become a question of vital importance how to secure good drainage, proper ventilation, and pure water; for without these the health of a community cannot be preserved, and that pestilence "that walketh in darkness, and that wasteth at noonday" cannot be stayed.

The good work that has been done in the past by the intelligent and large-hearted men who compose this body is already well known. The work yet to be accomplished is vast and important. Bringing to it, as you do, the best thought and the well-directed zeal of earnest, learned men, no one can doubt that grand results will be attained.

Coming here, as you do, without fee or hope of present reward, the good you will accomplish shall not be done in vain. Precious lives will be saved through the efforts of this Association, and I might intimate what your reward will be by slightly changing the lines of the poet: —

> "Heaven's gate is closed to him who comes alone;
> Save thou a life, and thou shalt save thine own."

For he who labors for the good of others shall not fail of his reward. Again, gentlemen, permit me to assure you of a hearty welcome, and to express the hope that this may prove a very pleasant and profitable session to every member of the Association.

III.

LAWS REQUIRING MEDICAL MEN TO REPORT DEATHS AND CASES OF INFECTIOUS DISEASE TO THE PUBLIC AUTHORITIES.

By O. W. WIGHT, M.D.,
Detroit, Mich.

AGITATION of the subject, indicated by the title of the paper here presented, in England is spreading, through the medical journals, to the profession in this country.

American physicians have sometimes expressed doubts whether the State has a constitutional right to require a service from them without compensation; but, to their credit, it must be said, that they have never allowed their real or supposed rights to interfere with the course of sanitary administration.

Inasmuch as the profession in this country have not, and in all probability will not, question either the propriety or public utility of notifying health authorities of the existence of contagious diseases in their practice, thus imitating a considerable number of the British profession, I shall limit myself to a brief discussion of the legal bearings of the question.

My sympathies are with the medical brethren in all wise efforts to maintain their just rights against the State, which in this country affords them little protection, and does not everywhere even recognize their existence as members of a distinct profession; but an exposition of the law governing physicians, and "persons acting as such," in their relation to the public, so far as the important point under discussion is concerned, may prevent fruitless conflict and direct their efforts in the right channel.

The police power of a State government is very extensive, and inheres in its sovereignty. "All property," says Judge Cooley (*Principles of Constitutional Law*, p. 308), "and all rights within the jurisdiction of a State, are subject to the regulations and restraints of its police power, except so far as they are removed therefrom by the express provisions of the Federal Constitution." (*United States* v. *De Witt*, 9 *Wall.*, 41; *United States* v. *Reese*, *U.S. Rep.*, 214.) "The police power may be defined in general terms as that power which inheres in the Legislature to make, ordain, and establish all manner of reasonable regulations and laws whereby to preserve the peace and order of society and the safety of its members, and to prescribe the mode and manner in which every one may so use and enjoy his own as not to preclude a corresponding use and enjoyment of their own by others." (*License Cases*, 5 *How.*, 504;

License Tax Cases, 5 *Wall.*, 462; *Munn* v. *Illinois*, 94 *U.S. Rep.*, 113, 124.)

Illustrations of the exercise of the police power, by State Legislatures, are very numerous. A few may be given, in order to make the subject clear to those who are not students of the law.

In exercise of the police power the State makes provisions for public education, establishing schools, prescribing the qualifications of teachers, regulating school ages, including the employment of all but licensed teachers, imposing conditions of school attendance, levying taxes for the support of schools, etc.

Although choice of employment is a right preëminently characteristic of civil liberty, yet the State may use its police power to regulate, even to restrict, its full exercise, — as the working of young children in factories, and of women and children in mines; as the requiring of a license to practise medicine or law, after examination to ascertain qualifications and fitness, even moral fitness, as well as the proper learning; as prohibiting altogether certain occupations that are opposed to public policy, like gambling.

The State, by virtue of its police power, interferes with certain kinds of business, — as the sale of intoxicating drinks, requiring license therefor, or even prohibiting it altogether; as regulating innkeepers and common carriers; as providing for the safety of theatres and other public buildings; as the establishment of exclusive abattoirs (*Slaughter-House Cases*, 16 *Wall.*, 36); as the suppression of or subjecting to restrictions the whole class of "offensive trades."

By exercise of the same sovereign power the State may, in certain cases, establish prices, — as the toll of bridges or ferries; as the fare of roads to which the State grants the right of eminent domain; as the hire of hacks and drays, to which is accorded the accommodation of the public streets; as the charge for storage in elevators, upon the ground of their *quasi* public nature (*Munn* v. *People*, 69 *Ill.*, 80; *Munn* v. *Illinois*, *U.S. Rep.*, 113); as the rate of interest, etc.

The State, by virtue of its police power, regulates the domestic relations, determining by its sovereign will how long children shall remain in the bondage of minority, at what age males and females may contract marriage, and for what causes divorce may be granted.

These examples give some idea of the extensive police power of the State. As the eminent jurist, already quoted, again says: "This is a most comprehensive branch of sovereignty, extending as it does to every person, every public and private right, everything in the nature of property, every relation in the State, in society, and in private life. (*Commonwealth* v. *Alger*, 7 *Cush.*, *Mass.*, 53; *Thorpe* v. *Railroad Co.*, 27 *Vt.*, 140.) The use of public highways is regulated under it; so are the public fisheries and mines, if any, and so are all the occupations of life. The domestic relations are formed, regulated, sustained, and dissolved under the rules it prescribes; the age at which a child becomes emancipated, the terms under which he may be allowed to apprentice himself

or be forced by the public authority to do so, and the measure of independent action in the marriage relation, are all determined by its rules." (*Principles of Constitutional Law*, p. 227.)

The State can exercise its police power, not only directly, but can delegate, at its sovereign will, its exercises to municipal governments, and to subordinate bodies within municipal governments. The Supreme Court of New York says (*People ex rel. P. Cox*, *Hun.*, 7, 214): "The Legislature has the power to confer the authority, to enact and enforce ordinances, not only on a municipal government, but on any department of a municipal government, as, for instance, on a board of health."

Now, the State, by virtue of its policy power, may undoubtedly require physicians to report cases of contagious and infectious diseases, arising in their practice, to the health authorities; also to make out death certificates, and deliver the same to the proper recording officer. A municipal government, or any department of a municipal government to which the State has delegated the necessary amount of its police power, may require the same service to the public. The State, or its duly authorized municipalities, may also require heads of families to perform the same duties. The public good and the public safety require such information, and the supreme governing agency has the power to demand it from those who possess it, by reason of their occupation and relation to the community. The ultimate principle, on which rests this exercise of sovereign authority, is expressed in the golden maxim of the Roman law: *Salus populi est lex suprema*, "The public safety is the supreme law." This maxim reappears in all modern systems of jurisprudence, and, although at certain dark periods it "shines like a jewel in an Ethiop's ear," still it remains as a gem of perpetual beauty and legal truth.

The physician, who is required to furnish the death certificate and the report of infectious disease, maintains that his time and his skill are his property, of which the State, or its municipality, has no constitutional right to deprive him, without just compensation or due process of law.

Let us examine the claim, by the hard process of elimination, and see whether we have any residuum. It may be incidentally remarked that the householder, from whom the State may, and sometimes does, require the same service, has a similar claim, resting on the same foundation.

The provision of the fifth amendment of the Federal Constitution, that "private property shall not be taken for public use without just compensation," is not applicable here, for all authoritative commentators and courts are agreed that it is a restraint upon the national power alone; it simply means that the federal government shall not take private property for national use, without just compensation. It is no restriction upon the police power of the several States.

This provision, however, is supplemented by an important clause in the Fourteenth Amendment, to wit, no State shall "deprive any person of life, liberty, or property, without due process of law." And most of the State constitutions have a provision embodying these two features of the federal constitution.

Already the discussion is narrowed down to the two definite questions, What is "property"? and What is "due process of law"?

A legal definition of the first question may possibly eliminate any necessity of answering the second question.

Is the service rendered to the public, by physicians or householders, in giving information of deaths and contagious diseases, gained by the nature of their occupation or social relation, really a property, a vested interest?

"Property and law," says Jeremy Bentham (*Principles of the Civil Code*, chap. 8), "are born and must die together. Before the laws, there was no property; take away the laws, all property ceases."

There is no law that transforms into property the knowledge of the existence of infectious disease and the cause of death, which the physician incidentally acquires in the practice of his profession. The knowledge which a citizen fortuitously acquires of any fact material to the issue of a cause in litigation is not his private property, on which he may set a price, and refuse to part with it except on his own terms. The State orders him peremptorily into court, and requires him to part with his knowledge under oath. It is customary to give the witness a small fee, not for what he knows, but in compensation for his time. A citizen who has the proper qualifications to act as a juror may be compelled to attend court in that capacity, and spend days or weeks in the public service. He receives a per diem, not in exchange for the exercise of his patience, his attention, his intelligence, his integrity, and his judgment, but as a recognition of the fact that his time is consumed for the benefit of the community. His time may be worth ten times as much as the pay he receives. His services are not recognized by the State as a vested interest, subject to barter and the fluctuations of market price. Any person who happens to know of the existence of a felony is required by the State to inform the proper authorities, under penalty of being treated as a criminal himself. The State offers no compensation for the trouble and danger of communicating such knowledge in the public interest. There are many things which the governing agency refuses to stamp with law as property. Commerce in testimony and jury service is not only opposed to public policy, but, when clandestinely engaged in, is justly regarded as infamous. Formerly, in England, the physician and the lawyer received an honorarium — "something given in gratitude for services rendered" — instead of fees; learning and effort employed in the restoration of health or the administration of justice might not be labelled as merchandise and designated as property.

I would gladly see the State conferring an honorarium upon the members of the medical profession for incidental services rendered to the public, but not in response to insolent demands for fees and threats of rebellion against needful law.

The obligations of physicians to furnish the public health authorities with death certificates and reports of contagious diseases in their practice not only pertain to this higher plane of legal duties, which is above and

beyond mere property considerations, as viewed in the amendments of the Federal Constitution and in provisions of the constitutions of various States, but may be construed as in the nature of a license. Every lawyer, when admitted to the bar, must pay a fee in order to be enrolled in the list of attorneys. The State, in the exercise of its police power, may impose any reasonable condition on the practice of medicine. It may require an annual license fee, or it may allow any man to practise physic or surgery only upon the condition that the practitioner shall furnish the public with certificates of death, and information of the existence of infectious diseases, within the sphere of his professional work. It is hardly necessary to say that the State may invest its municipalities with so much of its sovereign power as necessary to enable them to impose the same conditions.

Medical men who legitimately belong to the profession frequently petition Legislatures to guard their ranks against the invasion of quacks, and should not rebel against the sovereignty whose protection they invoke.

The principle here applied in solution of the question under discussion is admirably enunciated by the Court in a Connecticut case (*Bradley* v. *N.Y. & N.H. R.R. Co.*, 21 *Conn.*, 306) : "It is universally understood to be one of the implied and necessary conditions upon which men enter into society and form governments, that sacrifices must sometimes be required of individuals for the general benefit of the community, for which they have no rightful claim to specific compensation."

Only one other point requires consideration in this discussion. Admitting, hypothetically, that the physician has a vested property right in the services rendered to the public, as herein described, his remedy must be at law, to recover the value of such services. He cannot refuse to render the services demanded by the State, or by a municipality duly authorized by the State, upon the ground that compensation is not previously or concurrently tendered. Even when realty is taken, under the law of eminent domain, for public use, there is a broad distinction made between the taking by private corporations and the taking by the State itself and its municipalities. "When property is taken," says Judge Cooley, "by the State, or by any municipal corporation by State authority, it has been repeatedly held not to be essential to the validity of the law for the exercise of the right of eminent domain, that it should provide for making compensation before actual appropriation." (*Constitutional Limitations*, p. 560.) "The presumption of law is," says the Supreme Court of Massachusetts (*Talbot* v. *Hudson*, 16 *Gray*, 417), "that the State will keep its faith inviolate and honestly fulfil its obligations." Judge Sargent says (*Ash* v. *Cummings*, 50 *N.H.*, p. 621), "In cases where the State or a county or a town is to be made liable for the damages which an individual may suffer, by having his property taken for the public use, it is not so important that the compensation should be paid or secured in advance . . . because the presumption and fact are that these municipalities are always responsible." "The decisions upon this point," again says Judge Cooley (*Ibid.*, p. 561), "assume that, when the

State has provided a remedy by resort to which the party can have his compensation assessed, adequate means are afforded for its satisfaction, since the property of the municipality, or the State, is a fund to which he can resort without risk of loss."

As, then, there cannot possibly be any property, any vested interest, in a mere potentiality of service, only in service actually performed, and as the State and its municipalities cannot be required, like private corporations, to precede or accompany their demand for service with payment, it follows that the proper remedy is, not refusal to comply with the demand, but to present a claim for compensation, and to enforce the same through the agency of the courts. The same court that will inflict a penalty for disobedience to the law may adjudge that the party convicted and fined would have been entitled to compensation, if the required services had been rendered.

Such services are usually rendered within municipalities which have ample authority to consider claims, to allow and order payment of the same, which are amenable to the processes of the courts, and are liable, like individuals, for services ordered and received. It cannot be said, therefore, that the State has made no provision for payment of a just compensation, when such services shall be adjudged to be invested with a property right. (*Commissioners* v. *Bowie*, 34 *Ala.*, 461.)

If, then, medical men, in any particular locality, wish to test the validity of statutes and ordinances requiring them to make death certificates and report cases of infectious disease, my sincere and earnest advice to them is, that they proceed by a courteous demand for compensation, and not by a defiant refusal to obey law. They will thus secure the sympathy, if not the coöperation, of the health authorities. The public, for whose benefit and protection the State uses its almost unlimited police power, will, in that case, be much more inclined to treat their claim with consideration and respect.

IV.

SANITARY GOVERNMENT — PRINCIPLES AND FACTS.

By Hon. ERASTUS BROOKS,
West New Brighton, N. Y.

LIKE BEGETS LIKE AND GROWS UPON WHAT IT FEEDS.

What sanitarians have to deal with in the State and in the household, and how the work is performed, is the chief subject of this paper. The subject is of the deepest interest to every public body, to every private citizen, and especially to the family as a family; and, rightly considered, to the State as a State, and to every corporate and individual interest within the Commonwealth.

I speak of it not to enlighten or instruct the members of the Public Health Association, for it is to be presumed that, under the law of reasonable intelligence and of duty, they are acquainted with the one and quite ready to perform the other.

I speak now as a member of the State Board of Health, in one of the largest States of the Government, and as one for several years in the State service, in its Legislature, and in its recent conventions for making and amending the fundamental laws of the State. I believe, also, in the missionary work of education through voyages of discovery for the detection of the causes of physical disease, for the exposure of vices, crimes, ignorances, and neglects which injure, if not the souls, at least the bodies, of men. I believe in voluntary, manly, and benevolent service to perform this work. Professional service is wise, necessary, and just, whether in the pulpit, where "the violated law speaks out its thunders"; in the study and toil of the physician, whether selected to minister to the mind diseased, or to the temple of the human body, where so many diseases are born, retained, transmitted, inherited; and in the labors of those appointed to make, administer, and consider the civil and criminal laws of the land.

These are all appointed persons for specific, intelligent, and responsible work, and occupy, perhaps, the time and study of a million or more of its citizens. But I wish more to speak of those mental and bodily interests which include not only this single million of teachers, but of the fifty-two millions, young and old, in the land not included in what is called professional work.

There is a higher law than professional service, born of the Giver of all good, implanted in the best thoughts and affections of men bearing the image of the Creator, and destined — if physical pain and misery are ever finally removed — to secure that end, and chiefly through the

good will and good work of voluntary service, each man and woman and interest working in harmony for the preservation of life and health and happiness.

THE PREVENTION OF PREVENTABLE DISEASES IS THE FIRST PURPOSE OF A WISELY GOVERNED STATE.

The cure of bodily disease, where it exists, belongs to the physician, and latterly, — happily for the State, — the physician, in unselfish methods of counsel and conduct, consents to impart his experience, to reduce mortality, and to direct the ignorant, the thoughtless, and even the depraved, on the road at least for the removal of disease. He who saves a life, lessens a pain, or prevents a disease, is a public benefactor, and in this humane work the wise and faithful physician may take the lead. In the presence of such a truth it is not worth while, for laymen at least, to quarrel about schools or forms of medical practice; and all the more at this time is this true, as just now the country, as never before, is engaged in this work of health education.

As a layman I am glad to see sanitary discovery and science more and more developed from year to year under established forms of law; and when the law is complete, — science and law being thus embodied and united, — the result will be for the common good, and in its uses the best gift of God to the world; the death-rate will be reduced to about one-half of its present proportions, and the infirmities of age, the inheritances of disease, famines, plagues, and the accidents of life, will become the only causes of death.

In the most civilized countries of the Old World, and in Great Britain especially, sanitary science is embodied in wise forms of law, and the several States of the American Union are now each and all clothed with almost supreme power in these respects within their own borders. Where the States have no power to act, the Federal Government, so liberal in material gifts, must not omit its duty to itself and to mankind. If the politics of the State are of great importance, the health of the whole people rises to a far higher sphere for the common good; and therefore it is that this subject becomes of supreme importance.

In a Dublin lying-in hospital, eighty years ago, infant mortality was reduced sixty-eight per cent. simply by improvement in the purification of the wards of the hospital attendants. I have seen even a much larger saving of infant life than this in New York, from like causes, and by additional care as to food, ventilation, and cleanliness. If we could take in what past generations have communicated to the present, — and the present often foreshadows the future, — there would be amazement at past neglect and present ignorance and indifference in the saving of life and in the preservation of health. Let me, then, just here present — and more for the audience outside of this chamber than for those within it — some facts which are the fruits of observation, study, and experience.

1. While sanitary legislation is a public duty, sanitary instruction is the preliminary duty which will secure wise legislation. Lord Derby

once said, and with great truth, that you cannot make a population cleanly or healthy against their will; and it may be added, that where there is the will there is the way, and the will and the way mean both private inclination and the power to enforce it. Dr. Farr, the famous Registrar of Vital Statistics, embodying the higher law I have before referred to, has also said that "the hope of saving any number of human lives by hygienic appliances is enough to fire the ambition of every good man who believes in human progress." By these two methods, divine and human, progress is made in all sanitary work and in science itself.

2. The welfare and safety of the State are not only matters of paramount importance, reaching to all pursuits, occupations, and employments of individuals, but the question of the public health takes by legal prescription precedence in this order of State work. Merrick, Judge, Commonwealth *v.* Upton, in one of the States, has so decided under this ruling. I may add that recent facts demonstrate the truth that no form of government, local or general, can afford to neglect rules and regulations resting upon the public safety, and needed for the prevention of disease, or the promotion of health. Whether the death-rate is ten, twenty, or more in each one thousand people, depends upon this rule relating to public health, and this rule should become statute law.

3. The best sanitary work is performed in the love of knowledge and the love of men, and this statement is not a sentiment merely, but the truth. It is upon evidence of this truth we make the statement that sanitary investigation and work in the past have added, in longevity alone, thousands of years to human existence, and inestimable blessings to human comfort. We may also truthfully say, judging of the future by the past, that this is but "the beginning of the end."

4. Why, then, it may be asked, do insanity and crime increase in the land? While I am not sure that this statement is literally true, even in the United States, it is practically true and beyond dispute in the most civilized parts of the Old World, and probably as true here as there.

The increase of insanity, when beyond the increase of population, is largely due to the activities and excitements of the American people. It is a sad truth to learn, that at times and places where there is the most culture, there are the most suicides. Morally, as well as physically, it is true that everything in nature begets its kind.

It is, however, to continue the subject, true that moulds and moisture are sources of disease and decay, and that their increased growth may be prevented, and must be, if we would have healthy homes. It is true, also, that mental disturbances come from moral and physical disturbances. In the one case, to secure the healthy home, the dark, damp, mouldy places of the homestead can be got rid of by a simple process of fumigation with sulphur; and by the same process, at times, decomposition and putrefaction may be prevented. Certainly as much as this can be said of the proper treatment of the human body. Those two texts in Holy writ: "Know ye not that your bodies are the members of Christ," and "Know ye not that your body is the temple of the Holy Ghost,"

are as much sermons for a healthy body as for a moral life; and if the pulpit and the schools, the press and the forum, would more frequently illustrate these texts to those whom they instruct and teach, there would be far more physical education and improvement, and the schools would be far advanced from what they are at the present time.

5. The political state, let me say, so long as so much physical degeneracy is traced to improper workshops and factories, and to sleeping-rooms, owes allegiance to the physical welfare of the people, and especial protection to children of tender years, thousands of whom are unfit to be employed in the work in which they are engaged. To that end one class of children are forced or persuaded to attend our common schools to secure a decent education for future life; while another class, of the same age, less fitted for work, and needing the education more than the other class, are crowded for eight or ten hours in the factories and workshops. Beyond this neglect, which is almost a crime, it is also true that half of the diseases of children are either inherited or the direct fruits of vicious lives and bad examples.

The State may not fully correct this evil, but it can discuss it, expose it, and enlighten public opinion in regard to it.

Of the present mothers of the land it may be said, that, wholly unlike their ancestors, and especially in the New England and the Middle States, is this true, if not in the West, that one-half of them are unfit for maternity and resist it, and so also of a majority of the modern fathers in the work of paternity. No wonder that thousands of children are almost daily born of indigestion, and trained in the sad way which soon produces dyspepsia.

One source of this evil is to be traced to modern ideas of the necessity of what is called advanced education for women, — a kind of education in which hygiene has little or no part, though presented to the world as intellectual culture. Better would it be, in order to prevent this humane degeneracy, to give more attention to the health of the temple of the human body as the temple of the Holy Ghost.

In all these troubles the physician becomes the first teacher applied to for relief, where instruction should begin in the nursery, and extend even to the school-room, the academy, the college, and to all forms and places of instruction.

Even in Germany, where so much attention is given to education, ninety per cent. of all the physical deformities that have come under the notice of physicians date from the time when they attended school, and "the character of these diseases, it is declared, have corresponded exactly with the position occupied by the children in writing.

6. Disease also comes in vast quantities, and results from the want of the right kind of ventilation required for the human body. In the need of proper light, let it be always remembered, the eyes are injured. Every little child to be healthy requires two thousand cubic feet of pure air each hour, and the demand grows, according to the age, up to twenty-five thousand feet for the adult. The New York State Board of Health, upon

this one subject, — besides presenting a very able report from an expert scientist, — has issued a circular with sixty-eight special questions relating to light, heat, time, and ventilation, and one of the most gratifying signs of the times is the general demand for copies of this report.

7. One-half of the plagues of life come in what are diseases from living infections, and these are controlled by methods known as remedies, if not cures, for general zymotic diseases. Living ferments is but one name for source of disease. Many of this class of bodily ailments, and the most of them, as, for example, measles, small-pox, and cholera, originate not in ourselves. Once infected in this way, the disease spreads fearfully; but, as a rule, these plagues come but once in a lifetime. Not so with dyspepsia and rheumatism, which are often the tortures of a whole lifetime. No wonder that in our cities one-half of those who die, die under the age of five years, or that rheumatism, from which there is so much suffering, produces even degeneracy of race in families whose means are straitened. Intoxication is another cause both of degeneracy of race, and, at times, of fearful mortality. Then come the vices which belong to inherited constitutions, for which children are not responsible; and this is just where the sins of the parents, by some mysterious providence, are visited upon their children to the end of the third and fourth generation, if not to the end of time. It is just here, also, for reasons too apparent to need comment, that parents in certain conditions of life may well pause before they consent to bring children into the world to inherit their own infirmities of the flesh. Better perpetual celibacy than diseased children.

The wonder, all things considered, is not that so many children die, but that so many live; not that those whom the gods love die young, but that any of these cast-off children of poverty ever reach middle life and old age.

8. By a just consideration of the health and mortality of the country the subject of food must not be omitted. Men who make, or try to make, what is called "corners" in corn, wheat, and meat, to fill their own pockets with ill-gotten gains, with profits wrung from famine, and who thrive by speculation as much in the misfortunes of others as in their cultivated vicious skill in helping themselves, rarely take in the truth that death and disease are very often dependent upon dear food. The most diseases and the largest number of deaths are seen where there are the highest prices of food. Dr. Farr, in England, found that the death-rate in the English population falls three per cent. for each decrease of two shillings in the price of wheat. M. Messance, an eminent French writer, proves the same fact. That the gauge of health is the cheapness of food, apart and beyond the causes I have enumerated, is simply a fact. I may add the kindred fact that among the poorer classes the number of marriages is often regulated by the price of wheat. Emigration is also at times governed by the same cause. The mental causes of hunger or dear food are stated by Mueller to be, "feelings of general debility, actual and gradual loss of strength, fever, delirium, and violent passions, alter-

nating with the deepest despondency." Suicides also increase with every definite crisis in agriculture.[1]

Crime may, at times, also be traced to dear food, and scientists have demonstrated the precise increase of mortality from this cause in Germany and elsewhere.

In the sick-room, and especially for the children, there must be no imperfect nutrition; and yet how much of it there is in the dwellings of the poor, and among the depraved and negligent! One of the authorities before me declares that general distress and destitution in England increase crimes of all kinds. Serious offences and assaults excepted, the ratio is stated as follows: General crimes and distress, 24 per cent.; crimes against property, with violence, 50 per cent.; breaches of the peace, etc., 90 per cent. Other writers make the percentage much less; but all agree that cheap food is an element of order, comfort, and contentment; while dear food produces the opposite.

In four years, from 1878, the increase in the cost of grain was 50 per cent.; in meats, 44 per cent.; daily products, 70 per cent.; clothing, 26 per cent.; in sugar and other articles, from 15 to 21 per cent.

Mr. Grosvenor, of New York, makes the comparative *per capita* increased cost from $81.40 to $111.00. The advance in food alone has been almost 36 per cent., and the increase in wages is not in proportion to the increase in the cost of the necessaries of life. The food question is one to be counted as well in the light of general health as in the form of physiology and political economy.

GENERAL AND PERSONAL MAXIMS AND FACTS.

If there is to be any idolatry in this world let it be the worship of pure air, pure water, and of the sun as the source of light and the enemy of filth; rather than the too common worship of appetite, persons, and money.

Contagion is simply contagious, and in cases of diphtheria, of which we hear so much — recently of more cases than ever before — and know so little as to the sources thereof, it is in the fulness of evidence that it can be carried from house to house, person to person, community to community. It is found in the false membrane in the posterior portion of the mouth. It prevails largely in childhood, where the tonsils and larynx are most vulnerable. It comes where there are hereditary tendencies.

Here, then, is a disease which, by common consent, must be quarantined, separated at all risks, and, with nurses, as far as possible shut out from all those who are free from the disease; children especially should be excluded from the rooms where patients are confined, and special instructions given not to inhale the breath of the sick.

Even convalescents may, and do, spread the disease in the breath and apparel, by touch and otherwise. What may be done to prevent this

[1] Moeselle, on the increase of suicides in Italy, England, France, Austria, Sweden, and Germany generally.

malady in our intercourse is the simple but effective protection known as the sulphate of zinc, or common salt mixed with zinc. In the dwelling, and in all buildings where labor is performed, there can be no health where fresh air is excluded, nor where there are not proper ventilation and drainage from the bottom of the cellar to the house-top. Filth diseases — for the reason that like begets like — have their germs in decaying filth, and distributed through its many avenues and agencies. Hence the necessity of getting rid of cesspools and every receptacle of filth, of which we see so much in close proximity to the water used near the houses and business of the people; not even where, to bury danger, as it were, cement is used, is there any certain safety or protection. As a rule, the well water of a country town is not fit to be used. The many forget that there must always be the oxygen of fresh air to secure health; and we all forget that there ought to be taught in our schools knowledge as to the cause of contagion, infection, and filth. It is the ounce of prevention that here provides, in that knowledge which is power, the real pound of cure.

In regard to water let me say that it is often the source of disease. Not only do its impurities produce sickness, but chemistry shows that ice formed from water not fit to drink is also unfit for cooling water, or for close contact with any kind of food. Ice should not be used for domestic purposes which does not come from pure sources. Even in nature there is hardly absolutely pure water. The nearest thing to it is the distilled rainfall, or melted snow, fresh from the clouds of the heavens. While there may be purity in distillation, it is not wholly pure. The severe sickness at Rye Beach in 1875, seen and felt in the disturbance of the digestive organs, and there and then characterized by a sensation of giddiness, nausea, vomiting, diarrhœa, pain in the abdomen, fever, loss of appetite, and mental depression, was traced directly to the ice cut and used from a stagnant pond. While there were no outward signs of impurity, — just as there are none often in the worst conditions of water, — it was shown, upon chemical examination, that thirteen and fifty-two one-hundredths parts of the ice which was called crystal were impure from ammonia, albuminoids, inorganic and organic and volatile substances. These are indeed only simple processes, or approximations to purity, in what is called crystallization.

Even cholera may be imparted — though not contagious — through bad drinking-water, as in other vicious substances placed in the stomach. But, in contrast to this, putrefaction may be neutralized and prevented, or it may be transformed by fermentation and the odors destroyed by acids.

What is wanted, first of all, is knowledge, and then courage for the performance of every duty. When Lady Mary Montague, about one hundred and sixty years ago, as wife of the British Ambassador at Constantinople, learned that the villagers were in the habit of inoculating for small-pox, she performed the operation upon her own son, and introduced the practice into England, which gave so much moral aid to Edward Jenner, and established the practice long wished for at home. Two noble

ladies also consented to be vaccinated from the example, and this result opened the way to all the people of the realm, and popularized a practice that has saved so many lives. In a like spirit Miss Elizabeth Thompson, of New York, through Dr. Stephen Smith and Surgeon-General Woodworth, largely assisted in the creation of the National Board of Health. Such examples are worthy of unstinted praise and constant imitation. Coöperation in this kind of work, regardless of sex, sections, schools, or creeds, is a lifetime-work. In this spirit thoughtful and capable men united in action when the cholera visited the land in 1866, when it was placed under control by united and intelligent coöperation. In the same spirit, ten years since, the National Sanitary Conference was inspired, and the quarantine conventions held in 1857, 1858, and 1859.

The New York City Sanitary Code was modelled largely after the English acts of Parliament. Large sums of money were expended, even to the extent of probably $1,000,000. In time all the dens of the city were visited and mastered, and for the past twelve years constant progress has been made in the work of investigation, development, and progress. In books and in the news of the day we read of thousands dying daily whose lives might be saved, and of diseases which could be prevented.

As a rule Health Boards are unpaid officials, and their hardest work is to teach men how to live in health; how to avoid diseases; how to take care of children, families, dwellings, and workshops; and last, but not least, not neglecting the beasts of the field, as the faithful bearers of so many of our burdens and the sources of so much real personal comfort.

Disease is also scattered by the dairyman in person, as well as by his diseased cows, of which we hear so much in the way of cost and of cure in the form of death. I have also known animals poisoned by both food and water.

In regard to this subject of animal life and disease there is occasion for constant vigilance. Animal refuse of all kinds may be the source of disease, and there is too much of it in town and country. The cattle often transported over the railroad trains, and fed but once between Chicago and New York, and killed upon arrival, are not a healthy food. The loss in bulk, in weight of sixty-four pounds a head, or twenty-five thousand seven hundred and eighty pounds in twenty-seven car-loads, explains the physical condition of too many of the animals arriving at the seaboard, and almost on the instant converted into food. Often the battle is against ignorance, prejudice, dirt, and poverty; and often, too, all these are combined into one power to prevent cleanliness and simple decency in the very abodes where men eat, sleep, drink, live, and die. How many, indeed, literally go in pursuit of scarlet fever, typhus fever, diphtheria, and all of the known zymotic diseases! Multitudes not only as it were embrace these plagues, but communicate them, revel in infection and contagion, fretting and scolding until the evil hour of their own folly and ignorance is seen at their own bedsides.

THIS SUBJECT OF INFECTIONS

in certain conditions of the constitution and blood may well be a problem which no common mind can solve. I can understand, as a beginning, Prof. Pastour's statements in regard to chicken cholera, and spinal poison, to the end that healthy chickens may be inoculated with the blood of another chicken about to die of chicken-cholera, and imparting the most virulent poison to the extent, if the authority is true, — as it seems to be, — of dipping the point of the most delicate glass rod or even a needle's point into the hundredth and more parts of a broth condensed or reduced when coming from the blood-poison of a chicken suffering from cholera. The liquid thus infused becomes at once turbid. The poison grows and expands, even if the same broth of the healthy chicken is placed in a hundred different glasses, and any one of them receives the fatal touch. The blood of the one animal is not more deadly or more rapid in its work than the inoculation from even the thousandth vial thus treated. The micrococci here referred to are but another name for bacteria, or living organisms, vegetable parasites, or coagulated parts of fibrin in the blood. I cannot point out the distinction between all these organisms and the so-called bacteria. I present the subject simply as one of great importance, and as one needing attention in every school of medicine. We see that, when fibrin is in excess in diphtheria, splenic fever, and cholera, it begins to coagulate into granules and fibrils, and the result is, not only that like begets like, but that the little blood poison at the start spreads itself almost without limit. Whether the original poison multiplies into varieties beyond the original source of evil or not is beyond my knowledge. It is quite enough to know that the disease grows, like so many other evils in real life, upon what it feeds.

Scientists in medicine and in human constitutions will, in time, master all these results, as to the extent and limitation of disease by infection and inoculation. It is enough for the people to know that the common diseases of measles, scarlet, typhoid, puerperal fevers, and small-pox are infectious, and that the most of them come rather from bodily matters than from bodily emanations. Disinfection is a partial remedy and a duty; but the best medicine of all is the character and habits of life which may not require infection. Begin in all this work of order and cleanliness with the human body, and follow the work into the dwelling-house, and, especially where there ought to be drainage, sewerage, ventilation, feel that not only is plenty of water needed, but fresh air also; and that all traps must not only be sealed against the passage of gases, but supplemented by other contrivances, such as the complete ventilation of waste and soil-pipes, and by constant supplies of water.

But the whole subject is exhaustless in its details, though simple enough where there is a willingness to study and comprehend it, and to observe simply the laws of common sense founded upon the duty which every good citizen owes to himself, to his neighbors, and the general safety and welfare of the people.

GENERAL CONCLUSIONS.

That, in seeking homes or places of business, all ill-drained and low-lying districts should be avoided. Here are often — yes — constant sources of typhoid fevers, malarial diseases, and general want of health. They breed not only a wet and stagnant atmosphere, but in hot weather the foulest air, and, as an almost certain law of nature, just so many nests of fever. In England, as at York and at Malta, this atmosphere has produced diseases known as plagues, cholera, sweating sickness, and black death.

That, as a matter of observation, even the fowls of the air often show more sense than men of the earth. This is seen in the fact that the birds scent cholera and other infections, and fly from them, even when men lack the wisdom either to meet or overcome the evil.

That sanitary administration not only means personal comfort and health in the family, but economy in the State and in the family. Two hundred and fifty thousand lives and three millions of cases of sickness, and four millions sterling in money, are traced in one decade, in England alone, to sanitary administration. The wounds of the shot-gun are terrible ministers of death; but where the field of battle kills one person disease kills three, at least. Where, at one time, the death-rate in India was sixty-nine in a thousand, in the last decade, by wise sanitary administration, the number of deaths has been more than two-thirds reduced, and with a corresponding saving of health, wealth, and every worldly comfort. Such a record makes all comment needless.

That all common and other schools should be under the examination of local Boards of Health, where now they are often the very centres and nests of the diseases of children. Where a sick child is found in school, and other public places, let the home be visited, and its sanitary condition assured. That the hospitals and charitable institutions of the country should be limited as to the members in each, and this in order to prevent poison in the walls, floors, ceilings, and the spread of disease among all inmates. Home isolation and quarantine are best where there are intelligent nurses, and willing or intelligent people to be cared for. Cleanliness of person and of clothing, and the frequent change of clothing, the removal of everything offensive, and the non-use of the same dishes for food or drink, works like a charm. If possible, let there be but one nurse, and a free current of air. In twenty years of experience as a nurse, I read of one, at least, who always kept all forms of the like disease from which the patient suffered from other members of the family. Home treatment in all such cases is, as a rule, safer than the best hospital care.

That health organizations are essential to the towns, the State, and the federal government. In Russia, in 1830, '48, and '55, from twenty-three to twenty-five thousand persons died of cholera, where fifty thousand were attacked; and in 1866 only three thousand died out of fifteen thousand attacked. This reduction is traced by Prof. Zedkaner to the adoption

of the English system against the contagion of cholera. In England the prevention of overcrowded tenements was most salutary, and Lord Shaftsbury's Act for house drainage and ventilation reduced the mortality one half.

That, as a general law, there should be unity of action in the supply of drinking-water in all cities and in all large towns.

That harmonious and united action should exist to secure proper drainage and sewerage. Dean Stanley may be named as one of the millions whose illness and death have been traced in the district where he lived to vicious house-drainage and trunk sewer.

That, as it is in evidence in England, Russia, and elsewhere, that thousands of lives have been saved by proper treatment of diseases, and by suitable management and quarantines, encouraged and protected by governments who value human life and health, there ought to be in the federal government a permanent minister of health, or a Bureau or Board of Health. Where material interests receive much attention, with more than one hundred thousand government agents paid to superintend them, something is due to the mental, moral, and bodily interests of nearly fifty-three millions of people, — the State discharging its duties to the State local Boards of Health, to towns, cities, and counties, and the federal government its duty to the general interests of national trade and commerce.

In India, Russia, and Germany, it is noted that even the rooks fly away on the coming of the cholera, and reappear when it is over. Kites, vultures, and other birds of prey, abandon the cantonments of the army when cholera appears in India, and seem to scent it afar off, even in the very atmosphere they breathe. At least human wisdom ought to be equal to the birds of the air and the beasts of the field.

V.

SANITARY INSPECTION.

By A. N. BELL, A.M., M.D.,
Of New York.

INTELLIGENT sanitary inspection is the right arm of preventive medicine. It is the exercise of that knowledge which comprehends the importance of pure air, pure water, pure food, and a pure soil; and all the conditions likely to render these prime necessities to the maintenance of health impure.

While modern research seems to have well-nigh demonstrated that the chief factor in producing specific disease is a living germ, we are in danger of neglecting the presence of poisonous gases and other products of decay probably equally dangerous, both alike being subject to diffusion by means of the watery vapor of the atmosphere. Therefore it should always be remembered that the conditions of impurity in air, water, food, and soil, conducive to disease, are the same as those found to be most fruitful in the nutrition and propagation of organic germs.

Ophthalmia, influenza, bronchitis, pneumonia, diarrhœa, dysentery, and diphtheria, hold the same relation to badly constructed, poorly plumbed, illy ventilated, and overcrowded school-houses, as do erysipelas, pus poisoning, and puerperal fever to badly constructed, filthy, and unventilated hospitals. Of like nature, in their causative relations, are the same kind of diseases in the household, hotel, village, or city. Moreover, of like relations to the air and immediate surroundings are many diseases to impurities connected with trades and factories of various kinds, and above all to marshy districts. But in regard to all such preventable diseases the general practice in health administration hitherto has been to search for causes after their fatal results have been declared, instead of precautionary measures for their prevention.

Much has been said and written of late years on the importance of having sanitary inspectors of schools, and every sanitarian recognizes it. It only need be added in this place that the inspection should begin with the site, and the inspector should possess such qualifications, and be backed by such authority, as would secure the best practical conditions of site, construction, and fittings; and he should be so constant in the exercise of his office as to enable him to recognize and prohibit at the outset any and all conditions in conflict with the health of the teachers or pupils. But all that has been or can be said in favor of such service for public schools is of equal force in relation to other public institutions, and to many private ones, — if these may be made to include all places open to

public patronage, — *all* educational institutions (private as well as public), churches, assembly halls, court-rooms, jails, hospitals, asylums, charity institutions, hotels, lodging-houses and tenement-houses.

It would be easy to cite examples showing the fatal results common to the neglect of sanitary precautions under all the conditions herein suggested; but, unfortunately, such examples are so numerous throughout the country as to render special citations invidious. There is, in short, no room for discrimination in this regard other than that which applies to the greater or less importance of institutions or places with reference to the number of persons under their protection. Individually and collectively health is the most important condition of life; hence measures for its protection should be instituted and maintained under all circumstances.

The special demand for special sanitary supervision in house drainage and plumbing, by the Health Department of New York, Brooklyn, and Washington, and the success of its application, fully justify an elaboration of sanitary supervision over other conditions of habitation. The public has no reason to fear the results of intelligent sanitary inspection; and the time is at hand when sanitarians can afford to push their claim to public recognition. They have sufficiently demonstrated their familiarity with causes in conflict with health to be abundantly willing to take the risk and accept the responsibility of foretelling the consequences to be expected from ascertainable conditions. And, as in the case of the plumbing laws referred to, health authorities can well afford to press for legislative action to aid them in the prosecution of other measures equally essential for the successful exercise of their office. Thousands of houses — private as well as public — are annually built throughout the country, as well as in all our cities, in a manner dangerous to the lives of their occupants, because those who built them are ignorant of conditions which should and ought to be avoided, under laws and regulations requiring sanitary supervision. The college and hotel epidemics, which from time to time startle the public, are only the croppings-out of a common ignorance and criminal negligence, which swell the mortality lists to more than twice their needful dimensions. It is not necessary, in this presence at least, to do more than merely allude to the immense saving of human life in many English and European cities by soil-drainage, since the public was taught by sanitarians that soil-moisture is a fruitful cause of pulmonary consumption. And all the members of the American Public Health Association are supposed to be familiar with the life-saving work, under the auspices of the National Board of Health, based upon skilled inspection service, against the importation of contagious and infectious diseases by commerce, the redemption of Memphis, the Mississippi-river service, and the recent measures for the prevention of small-pox through immigration. These are black-board lessons which those who run may read, and learn therefrom that like causes will be followed by like effects everywhere.

For the following equally profitable lesson in health administration I

am indebted to Drs. Janes and Nagle of the Health Department of New York, premising that for the last six years this Health Department has employed fifty sanitary inspectors, six weeks in midsummer, when the city mortality is ordinarily greater than at any other season of the year, to make a house-to-house inspection of the tenement-houses. The inspectors, besides reporting to the Health Department any causes in conflict with the health of the occupants, are furnished with pocket cases of ready remedies for diarrhœa and other diseases they are most likely to meet with, and sanitary tracts for distribution among those who can read. Wishing to ascertain the effect of this six-weeks' inspection service on the health of tenement-house occupants, as measured by the death-rates, — bearing in mind that about two-thirds of all the deaths in New York occur in tenement-houses, — I requested an extract from the records of vital statistics, giving the death-rates for the corresponding six weeks for six years before this inspection service was instituted, and the six years since.

An analysis of the table shows an average saving of 6.28 lives per one thousand population, or about seven hundred and twenty-five for every six weeks' service. And, besides this, the benefit of the sanitary knowledge communicated by the inspectors, through personal contact, inquiry, and suggestion with and to the people, is probably of more than equal value; insomuch that the number of lives saved annually by this six-weeks' inspection service may safely be estimated at not less than one thousand five hundred. These fifty inspectors are employed in this service at the rate of $100 each for the period, — the appropriation made for it being special, to the total amount annually of $5,000.

Several important questions are suggested by these figures: —

1. Why should not this searching for causes of sickness be made the leading feature of health service generally, instead of the more usual use of sanitary inspectors in examining nuisances previously reported by citizens?

2. Why should not the health authority be made advisory to all co-ordinate branches of public works, with special reference to sites for school buildings, and factories of various kinds? In the precincts of Brooklyn there are factory nuisances (on Newtown Creek) of such magnitude and notoriety as to have been heard of all over the country; and so great are the pecuniary and political interests involved in them that the efforts of the Health Departments of New York and Brooklyn for twenty years, and the State Board of Health of New York for the last two years, have been effectually resisted for their abatement. And, at the very time of putting these notes together, a week ago, the newspapers of Brooklyn published, as an item of news, that a certain oil company, of unlimited means of producing stench, had secured a building-site for a factory in a portion of that city which will expose fifty thousand people to nuisance.

With mandatory powers conferred on the public authorities, requiring a reference by the Commissioner of Buildings of all applications for such structures to the Health Department, before permit for their erection is given, they would be prohibited.

The following table gives the results referred to on p. 36: —

Extract from Record of Vital Statistics, — Health Department of New York City, — showing the number of Deaths, and the Death-rate for six weeks for the six years last preceding the institution of the Mid-summer Tenement-House Inspection Service, and the corresponding six weeks since the institution of the said service.

	WEEK ENDING											
	JULY 8.		JULY 15.		JULY 22.		JULY 29.		AUGUST 5.		AUGUST 12.	
	Deaths.	Death-rate.	Deaths.	Death-rate.	Deaths.	Death-rate.	Deaths.	Death-rate.	Deaths.	Death-rate.	Deaths.	Death-rate.
For the year 1871	766	41.72	822	44.77	640	34.86	545	29.69	658	35.84	644	35.08
" " 1872	1,591	85.54	1,022	54.95	894	48.07	768	41.29	689	37.04	672	36.03
" " 1873	683	35.51	667	34.68	917	47.68	908	47.22	837	43.52	745	38.74
" " 1874	452	22.60	640	32.00	824	41.20	861	43.05	744	37.20	691	34.55
" " 1875	774	37.97	934	45.81	939	46.06	786	38.56	718	35.22	674	33.06
" " 1876	973	47.65	1,293	63.30	929	45.46	737	36.06	588	28.76	686	33.54
Average death-rate . . .		45.16		45.92		43.89		39.31		36.26		35.16
For the year 1877	720	34.74	825	39.80	756	36.46	718	34.62	605	29.16	604	29.10
" " 1878	671	32.20	708	33.97	805	38.61	669	32.08	568	27.23	579	27.75
" " 1879	751	35.57	698	33.05	772	36.55	600	28.40	692	32.76	653	30.89
" " 1880	916	39.35	745	31.98	649	27.84	641	27.49	623	26.70	642	27.50
" " 1881	1,166	48.76	971	40.58	970	40.52	819	34.19	983	41.02	733	30.57
" " 1882	747	30.34	1,102	44.73	999	40.53	1,311	53.16	827	33.51	814	32.97
Average death-rate . . .		36.83		37.35		36.75		34.99		31.73		29.79

But, again, and most important, what should be the qualifications of sanitary inspectors that they may give decisive opinions comprehending such interests as those involved in the sketch?

Intelligent sanitary inspection, such as herein suggested, rests upon: —

1. A knowledge of physics; of the principles of chemistry in particular with regard to the methods of analysis, and their application in searching for impurities in air, water, food, and soil.

2. Pneumatics, hydrostatics, and hydraulics, with special reference to the principles of ventilation, the laws of heat, and the distribution of water.

3. Habitation, — use, tenantry, condition: comprehending structure, building, material, lighting, warming, care, food and water supply, disposal of refuse, house and soil drainage; boundary, district, physical geography and meteorology.

4. Contagious and infectious diseases.

5. Preventive measures. If to the foregoing summary of qualifications, and all that it implies, there be added a thorough cultivation of the senses, familiarity with, and experimental knowledge on, the uses and modes of testing the efficiency of mechanical contrivances for sanitary purposes, and close practical observation, — the causes of more than half the diseases which afflict mankind may be prevented, and the death-rate proportionately reduced.

VI.

THE RELATION OF HEALTH ASSOCIATIONS TO THE PRACTICE OF MEDICINE.

By JOHN J. SPEED, M.D.,
Louisville, Ky.

The aim of all medical life is the relief of human suffering. It was so in the beginning; it is so to-day.

To claim that much progress has been made in that direction would be idle in such a presence as this. When all other departments of thought have gone forward with wonderful rapidity, it would be a miracle if medicine alone was stationary. But medicine has not been stationary. It has triumphed over obstacles which stood in the way of our fathers; it has vindicated its claim to great learning and great beneficence, and challenges the admiration of intelligence and virtue wherever intelligence and virtue are factors in civilization. Practical medicine has done much; but humanity, stricken and smitten and suffering, demands more, — demands not only relief, but protection against the possibility of suffering.

Philanthropy and science answer the demand, and say, so far as nature permits, protection shall be given; and thus public sanitation takes the reins.

Now, in order to prevention, we must learn the causes. The causes ascertained, we remove them. Where we cannot remove them we will follow the natural history in disease, and having learned *that*, we know when to interfere and when to let alone; and right here is the relation which health boards bear to the *practice* of physic.

What is meant by history in disease? Observation has shown that certain diseases have an origin, a progress, and an end, so uniform in their operation that we can say, from the beginning, where and what the end will be. For instance, a broken bone is brought to you; the ends are placed in apposition, splints applied, and a bandage run round it; and without a drug, or any after visit of yours, in twenty days the ends have united. You have a clean cut on leg, or arm, or chest; apposition of the edges, strips of adhesive plaster, and no after attention, you have in two, three, or four days, adhesion and a clean scar. Ten thousand observations in the generation establish this as history in fractures and clear-cut wounds. Know *that*, and you do not attempt to *cure* your wound in any other sense than by taking care of it; recognize its history and let it alone. This recognition of history is not confined to wounds and injuries.

In your rounds to-morrow the sensitive mother calls your attention to

a child which she thinks is not well. Your examination reveals no marked case, only *malaise*. Your next visit reveals some fever and a slight flush. The next day, fever still, and an eruption about the forehead and face; and you call it measles. This eruption goes down over the chest and extremities, and in five days the child is well. This is natural history in measles, and, being self-limited, you let it alone. Sage tea, pennyroyal tea, and all the other teas of leaves and roots, from field or forest, have not arrested by one moment, or modified for good by one atom, the straightforward progress from inception to end; the disease has lived its life and passed away.

Instead of this eruption you find another with high fever, scattered specks, sore throat, and up the roof of the mouth you find a streak like the flush of sunset just as the light is going below the horizon. You say scarlatina, and watch the morbid action along the recognized channel. Polypharmacy receives a blow, and history triumphs here also.

Then comes that loathsome thing, which has scourged the world, and against which Jenner has aimed his deadly batteries, with its headache, backache beyond endurance, fever, desiccation, pustulation drying up in twenty to twenty-two days. How marked is history in small-pox? Does anybody cure small-pox? It is self-limited; has a life to live; has its own history. Thus, your interference looks only to such measures as may soften symptoms, and not to such as may be directed to the *cure* of small-pox. Now, recognizing all these as self-limited diseases, having a history, a life to live, and so end, we do not undertake to arrest them or cure them by medicines. We simply watch and wait. Thus, I say these health boards, scattered from Boston to New Orleans, occupy a standpoint from which the polypharmacy practice is to be modified and held in check. What may be the outcome of thought and experiment in the workshops of Germany and France, which startle us by their promise, no one now can predict; but these thought-shops certainly point with great directness to the idea of a largely modified practice in the near future.

I have said, in another place, that the medicine of the future is to be preventive medicine. If we cannot prevent, and disease sets up, then the aim is to *cure*. Now, in many forms of disease, this is impossible, — impossible because long observation has shown that certain morbid processes have fixed limits and a definite course, which course must be run till the limit is reached and morbid action so ends.

If this is so, — and I believe it is so, — manifestly it is the duty of to-day to study history and self-limitation. Cause, history, and ending unquestionably come within the purview of the sanitarian; and the more clearly these three ideas are held before us the more manifest is their relationship to practice, and the more certainly does a modified practice grow out of their uniform existence. An old adage tells us that "History repeats itself"; as in the past, so in the future, history repeats itself. In casting about for a basis upon which to construct a philosophy which should embrace and explain the multiplied relationships of the healthful

functions and the almost infinite relationships of morbid action, the medical mind has ranged through nearly all the avenues of thought. Facts and dreams and superstitions and myths and astrology and observation are intermingled in a confusion which, to us, looks like chaos.

The prophet leader of the Hebrews, under the guidance of a Power greater than himself, elaborated for his people a system, which is the first on record, and is transmitted to us in the Pentateuch. The Egyptians worked out for themselves a rough system, based upon crude observation and the cabalistic words of a superstitious priesthood. The fire-worshipping Persian consulted the magi, and looked to the stars for guidance. The Greeks had their health gods and goddesses. The Hindoos had their Brahmin priests, replete with an incomprehensible superstition. The dull mind of the Chinese revolved around ideas of heat and moisture, with ginseng and tea as their pharmacopœia. The Druids had their mistletoe boughs, their consecrated woods, and the sacrifice of white bulls with religious service. The Japanese trusted to the moxa, and burned everybody, old and young, the sick and the well.

Whatever their grade of civilization, all the oriental peoples, back toward the dawn of history, had fables and legends and gods and superstition at the bottom of their philosophy.

These world-old speculations and many of the vagaries of modern times are covered with dust, and at the end of three thousand years it has become our turn to attempt the discovery of an underlying principle, — attempt the establishment of a philosophy of medicine. We claim, as the central idea of that new philosophy, the sanitarian's watchfulness over cause, and the physician's watch over history, in disease. Each one of the old philosophies imagined itself based upon granite; but as the stream passed by the granite crumbled and the philosophy went under. It may be that the human machine, kept in motion by a power purely spiritual, has material and spiritual interests so interblended as to preclude any such knowledge as the scientist reaches out after; but to my mind this idea of origin and history opens the way to broader daylight than has yet fallen upon the practice of medicine, and all the nations are on the track of it. The brilliant Frenchman, the delving German, the philosophic Briton, are awake to the same facts, walking in the same paths to the same end. They have pryed out from deep thought-mines truths which startle us and promise richer truths.

Uniting the brilliancy of France with the working power of Germany and the philosophy of Britain, the American adds his practical common-sense, and stands forward to-day the best practitioner of them all.

VII.

THE NEWPORT (EDINBURGH) SYSTEM OF SANITARY PROTECTION.

BY HORATIO R. STORER, M.D.,
Of Newport, R.I.

In answer to the invitation of the Executive Committee of the American Public Health Association, that I add to what I said at a former meeting,[1] concerning sanitary protection at Newport, in view of the two years' additional experience of the new system of sanitation there in successful operation, I shall endeavor to be brief.

American sanitarians are now familiar with the essential idea of "sanitary protection," as conceived by Prof. Fleeming Jenkins, of the University of Edinburgh, in the spring of 1878,[2] and thence transplanted to Newport within a very short time of its inception, namely, in November of the same year.

The bibliography of sanitary protection is still in its infancy. The earliest publications upon the subject were three lectures by its originator, Prof. Jenkins, before the Philosophical Institute and Medico-Chirurgical Society of Edinburgh, which were printed in that city in 1878, under the title of "Healthy Houses," and republished in this country the following year, with brief editorial notes by Colonel Waring, nearly six months after the formation of the Newport Association. A very able article has been contributed by Prof. Pinkham, of Lynn, in the Transactions of the American Public Health Association, vol. vi., 1880, reprinted in the *Sanitarian* for March, 1881; and papers by the present writer, both upon the general subject and its application to the needs of Newport, have appeared in the *Sanitarian* for March, 1879; May, August, September, October, November, and December, 1881; January, February, March, April, and May, 1882, — the latter series of papers having been prepared at the request of the Rhode Island State Board of Health; *Public Health* (N.Y.), for August, 1879; the Transactions of the American Medical Association for that year; and the Transactions of the American Public Health Association for 1880.

Time enough has elapsed — four years — since the Newport experiment — now such no longer — was commenced, to enable competent judges to form an estimate of the value of the new system. The example of Newport has been followed by other communities, — first among which was

[1] *Trans. Am. Pub. Health Association*, vol. vi., 1880, p. 209.
[2] *Edinburgh Med. Journal*, April, 1878.

Lynn, Mass., through the influence of that skilled sanitarian and member of the American Public Health Association, Prof. J. G. Pinkham; and, subsequently, Trenton, N.J., Brooklyn, Savannah, Montreal, etc.

It was early alleged by the writer that prominent among the advantages of "sanitary protection" would be found the aid it could afford to State Boards of Health, and even to the National Board. As to the actual result the following acknowledgments give sufficient evidence. "The organization of associations among the people, for the promotion of sanitary reforms," says the National Board, "is a most encouraging evidence of the general awakening of American communities to the vital interests of the public health. The duties of such associations are threefold: —

1. In towns and cities where no Boards of Health have yet been instituted, such volunteer associations are capable of doing a most important pioneer work. Before lawfully constituted authorities can perform their functions effectually, there must be that enlightenment of the people necessary to a proper appreciation of the measures devised and executed. These measures frequently appear to be arbitrary, and the mode of execution summary, and hence ignorant communities are often aroused to violent opposition to the acts of sanitary authorities. But these arbitrary and summary methods of dealing with conditions affecting the public health are vitally important to complete success in the administration of health laws. When the people are fully alive to the varied and ever-varying sources of disease in and around their homes, and to the nature and effectiveness of preventive measures, a public sentiment is created, forming the basis on which sanitary administration can securely rest, however radical may be the forms attempted. This popular education can best be accomplished at the present time by associations which are devoted to the practical study of the local and existing causes of diseases, and which soon leaven the entire community with useful knowledge relating to the public health.

2. In the absence of a Board of Health, such a sanitary association may be protective in its work. Every member may be entitled to the aid of the association in the improvement of his own premises. Such bodies have skilled inspectors, architects, plumbers, and engineers, whose services are furnished to members gratuitously. The advantages of membership are, therefore, very great to the individual householder.

3. The volunteer association, as an auxiliary to the Board of Health, when that is established, may be of immense importance. It has a power of sustaining the health authorities in their war on hoary and often chartered nuisances, which may be indispensable to success; or, again, it may supplement the legitimate work of the constituted Boards of Health, and prove itself an auxiliary organization of such force at the critical moment as to give to measures stubbornly resisted the impetus necessary to overcome all opposition.

The volunteer sanitary association must, therefore, be regarded as a necessity in this country. It is to be hoped that they will be multiplied, until every town has its active citizens' sanitary association.[1]

The following is the verdict of the State Board of Health of Rhode Island: —

In Rhode Island, "The town councils of the towns, and the aldermen of the cities, are by law the local boards of health in their several towns or cities, unless the town councils or city councils appoint special boards of health to supervise that department of duty in place of the said town councils or board of aldermen.

"In the State of Rhode Island, no town or city council has appointed any such board for a permanent work, or delegated its powers in the direction of conserving the public health to any individual, board, or committee. In compact communities, where exists a popu-

[1] *National Board of Health Bulletin*, 29th Nov., 1879, p. 175.

lation of ten thousand or more, a health officer or board of three or more persons, having special qualifications for making sanitary investigations, should be appointed to detect and report the existence of places and conditions prejudicial to the health of the people in the vicinity of those places, and suggest means of abatement.

"In the absence of such special appointments, the people of any compact community may accomplish much by the formation of voluntary associations, for the mutual advantage of the members themselves, and eventually of those in the midst of whom they reside.

"But few such organizations have been formed in this State, and among them by far the most important is the Sanitary Protection Association of Newport, an account of which follows, given in considerable detail, as the reasons for the organization and objects to be attained exist in other communities, and the views entertained by its members are eminently pertinent and true, and may be profitably entertained elsewhere. It comprises, among its members, gentlemen of the highest intelligence, largest culture, and most prominent social position in Newport, men distinguished in literary, scientific, and business pursuits, private citizens, and citizens connected with public service in the city, the State, and the United States.

"It is not too much to say, that its existence has been and bids fair to be of value to the city, as a constant monitor of sanitary neglect, and a constant agitator of questions appertaining to public and individual health, healthy homes, and healthy surroundings. It would be well if such an organization existed in every town in the State. The let-alone policy is the policy of retrogression and decay. Agitation is life, apathy is death.

"If, as is alleged by some parties, this association is too aggressive, and seemingly unwarranted in its attacks upon the sanitary and legal status of the city, it should be remembered, in extenuation of its proceedings, that reform is seldom accomplished otherwise than by vigorous and repeated attacks upon existing evils."[1]

One of the chief aims of the Newport Association from the very moment of its foundation has been to obtain, first and foremost, a city Board of Health, separate and distinct from the Board of Aldermen. Entirely aside from the fact that a city of the pretensions of Newport to special salubrity, upon which it founds much of its claim to be the chief health as well as pleasure resort of America, should give reasonable guarantee of its good faith in so important a matter, it seemed to the Association that it was affording a fair proof of its own good faith in thus endeavoring to establish a public board outside its own jurisdiction, to which it was willing, so far as was right, to be secondary and subservient.

It was early found that Newport, in this as in all other matters, was true to its traditions. It is a city of very peculiar type. Among American cities it certainly stands alone. Its people pride themselves on the accident of their birth; as though it were not greater merit in one born elsewhere to come to Newport, through his own selection and voluntarily, than to be a resident merely through his mother's having been in the city at the time of her lying-in. Its people live in the past, especially priding themselves on the fact that they drove from the place at the close of the Revolution all the wealth that it then possessed, and a large portion of its best intelligence, education, and refinement, confiscating the property of the colonial merchants and officials, as it did, through its numerous privateers, so many foreign ships engaged in peaceful traffic upon the high seas. History but repeats itself. In these latter days Newport invites the world to its bosom. Poor, otherwise, for it has no

[1] *Third Annual Report R.I. State Board of Health*, 1881, p. 222.

commerce whatever, and almost no manufactures, it takes with unsparing hand all that it may from its visitors, and as a community gives the very least that it can in return. As to our own special field, it chose a competent Board of Health, separate from its then town council, in 1798, eighty-four years ago, with "power to search all houses, stores, cellars, ships and vessels," where any nuisance was suspected, — and at once, ashamed of having been almost foremost in this country in such good work, it incontinently suppressed the Board because (peace to the memory of its members!) they had ordered that buildings within the compact part of the city should no longer be used as slaughter-houses. From that to the present moment the obstructive (wrongly called conservative) public sentiment thus evidenced has uninterruptedly manifested itself. As the town, through adherence to old traditions, became more and more fossilized, there obtained more complete crystallization as to the general view of public sanitation. Seen through such a medium all the ways of thought and action that exist among ordinarily advanced men have seemed distorted and false. The more in unison with the standard of the country, the less became such views in accord with those of old-fashioned Newport. Gentle remonstrance was unheard, moral suasion sneered at, an appeal to the experience of all who are expert in such matters ridiculed; until finally, when it became necessary to assert that each citizen has an inherent right to pure air, pure water, and pure soil, and to insist upon their being granted to each by the public servants whom each has chosen, there arose the cry that "Newport will not be bullied," followed by public exhortation upon the part of its most respectable Dogberries towards acts of violence and forcible expulsion, if not, indeed, of extermination itself. For many a long day, possibly not since that of Roger Williams, has there occurred in Rhode Island such a tempest in a teapot, or rather, one should say, such a stirring of an ancient dunghill, — for it would almost seem that with its respect for things of the past, and its reverence for family relics, Newport had been priding itself upon preserving with sacred care all its ancestral privies, and even the ante-revolutionary dejecta that had been entrusted to their depths.

That this language is not overdrawn, or in any sense unjustifiable or improper, the members of the Association may learn from the following paragraph, which is taken from the Newport *Mercury*, "established by Franklin" (not *the* F., but a kinsman), of September 16, 1882. The article was written in all sincerity by one of the "peculiar people" in whom Newport takes such pride; said, indeed, to be one of its ex-mayors. The special point of offence was that there had occurred a fatal case of sporadic cholera, which had been returned to the authorities as such, and not as "bilious colic" or "bowel complaint," in the Newport fashion; and the counterblast was directed against the writer (who had seen the case in consultation), and his colleagues of the Newport Hospital, and the Newport Medical Society. In the official report of the inquest made by him upon the case, Dr. Cabell, President of the National Board of Health, states that he "freely admits that the symptoms and *post-mortem* appear-

ances were entirely consistent with the view that the case was one of specific infectious cholera." Published anonymously, the attack was signed with an asterisk (appropriate emblem, that of the stelliger, for a person so dead to shame); perhaps the most regrettable of its features, as regards, at least, the credit of the community, is the fact that the editor of the newspaper, a respectable Newporter, who, by permitting such a stab in the dark, acknowledged it as his own, is at present the Speaker of the House of Representatives in the Rhode Island Assembly.

NEWPORT'S SANITARY STATE. — A VIGOROUS PROTEST AGAINST MEDICAL CRANKS. *To the Editor of the Mercury*: — Is it not about time that these medical cranks who have inflicted their presence upon our city uninvited, and, so far as the writer knows, undesired, shall be estopped from slandering our ancient and goodly heritage, which continues and persists, in spite of all their ravings and idiotic pulings, to be an exceptionally healthful city, — indeed, one of the most healthful not only in this country, but in the world? These men — well, let the word stand — who have diagnosed a genuine case of Asiatic cholera, and kept it on hand for a week in order to test its contagion, thought they had a sure thing against old Newport; but it proved but a *mare's nest* at best. If the matter was not of so serious an aspect regarding the fair fame of our beautiful "isle of the sea," it would be simply ridiculous — simply this, and nothing more. No, sir; there is no danger in Newport from epidemics or malaria. The only real danger is to be apprehended by people who are ailing, and who are idiotic enough to place their lives in jeopardy by employing medical cranks and hygienic Guiteaus to really help them along for a passage over the river Styx. Medical science, at best, is acknowledged by the ablest physicians to be but a series of experiments, even when administered by able and entirely sane men. But in the hands of medical cranks and insane sanitarians it is dangerous, and to be shunned by all sensible people. Lynch law is not a wholesome or desirable one, nor is it to be administered outside of the statute law. Nevertheless there do come times and crises when it would seem that a vigilance committee is an outgrowth of an immediate and pressing want of communities so placed as to find no other present or available remedy. It would certainly seem as if the time had arrived when public indignation should be crystallized in some tangible shape, to bear heavily upon the individuals who persist in slandering a city and robbing it of its good name, without any justifiable cause, or any cause not born of their own diseased brain and conceived in spite or a desire to promote their own self-interest.

While admitting the necessity of cleanliness and proper sanitary regulations, the more reasonable of the profession, Drs. Turner (the city physician) and Watson, whose opinions are entitled to respect on every account, and have in them also a strong substratum of common-sense (always a desirable element), deny that there is any occasion whatever for the wild howlings of these medical dervishes in regard to the unhealthful condition of our city.

There is a saying, *semel insanavimus omnes*, — that all are insane at some time, or have their insanities, more or less, — and it is the part of charity to presume that their portion of insanity has fallen to these medical prophets of evil, and has taken the form of horrible phantasms in regard to the dangerous sanitary condition of Newport, by which they seem to be haunted in the shape of bad smells, — cholera, typhoid, and malaria, — until they are obliged to howl and publicly everywhere attract attention to what is a mere delusion, although a dangerous one to the reputation of our fair city as a healthful resort.

I must be pardoned for again thus stirring the Newport dunghill. Suffice it to say, that Newport has as yet refused to appoint the separate Board of Health, to which it has been enjoined by two distinct Acts of the State Assembly. The time when it will do so is, however, close at hand. So deep has been the agitation, so fervent the heat throughout

the community, that with the change there will come a general inburst of modern ideas. It is simply the old story of the sibyl. At first sanitarians would have been satisfied with the suppression of a few of the most flagrant nuisances, and beyond this, for the time at least, have remained content. With each refusal to amend there has arisen the desire to obtain greater and greater reforms, and now there will be no permanent satisfaction or peace until the old and antiquated way of conducting the city's affairs is abolished throughout and forever. So far as concerns sanitarians evidence will be hereafter furnished to show that the mortality reports of Newport, to which the city has constantly turned with pride as evidencing its absolute healthfulness and its comparative superiority over all similar places, are, through faulty nomenclature, and suppression and falsification of evidence, absolutely unreliable.

At the time of writing this paper the excitement in Newport upon sanitary matters, which was already more than blood-warm, has risen far above fever heat, through the unexpected agency of Dr. John C. Peters, of New York, who had been passing the season there with his family. As Dr. Marion Sims had done many years before, Dr. Peters expressed his mind freely regarding the general and special conditions of the city, and, like Dr. Sims, has been temporarily martyred for his pains by the inhospitable natives. Very hard words have been used upon both sides in print, and Dr. Peters has the satisfaction of knowing that he has effectually pricked the bubble of intense self-satisfaction, with which the city had been delighting itself for an indefinite number of years. Not only is this the case, but the scurrilous appeal to lynch law, which has been already quoted, served to at last overcome the apathy of the pleasure-loving and indolent cottage owners, the so-called summer residents, who now pay thirteen, twenty, and fifty per cent. of all the taxes of New York; and it was determined by them to combine for mutual protection against the obstructiveness and the selfishness of the municipal authorities and their immediate supporters. Within a fortnight after it had been suggested to submit the sanitarians to the tender mercies of a vigilance committee, a public meeting was held, in response to the following call: —

NEWPORT, R. I., Sept. 18, 1882.

To the Summer Residents and Others: —

DEAR SIRS, — There have been numerous complaints the present summer of bad municipal management in matters directly affecting the convenience, pleasure, comfort, health, and even the lives of those of us who, though paying a large proportion of the total taxes of Newport, are yet prevented by absence from the city during the early spring from all voice in its direction, — as, for instance, in respect to a more thorough day and night police patrol, electric lighting, the watering the principal drives (notably Bellevue and Ocean avenues), the granting of liquor licenses on Bellevue avenue, sewerage, the cleaning the streets, and other sanitary necessities, for the remedy of all of which it seems necessary to have concerted action. We therefore request you to meet us at the old Casino, in Freemasons' building, corner of School and Church streets, on THURSDAY, Sept. 28th, at 4 o'clock P.M., for the purpose of maturing a plan which shall secure to ourselves and our families greater consideration and safety for the future.

Your personal attendance, for reasons which will be evident, is particularly desired.

Milton H. Sanford,	of New York.	Wolcott Gibbs,	of Cambridge.
Frederick Sheldon,	"	F. O. French,	of New York.
J. N. A. Griswold,	"	H. G. Marquand,	"
David King,	"	Raphael Pumpelly,	of Newport.
John Whipple,	"	Fairman Rogers,	of Philadelphia.
J. H. Van Alen,	"	Hugo Fritsch,	of New York.
R. M. Hunt,	"	J. S. Brownson,	of Elizabeth, N. J.
Henry A. Rice,	of Boston,		

The meeting was largely attended, those present representing over twenty millions of private capital. The general condition of public affairs in Newport was freely discussed, and it was decided that the apathy, negligence, and mismanagement of the city authorities had reached a degree that could no longer be endured. Gentlemen of the highest social position and of national reputation avowed their intention of hereafter having a voice, and even a hand, in the direction of the town's affairs, and their purpose, if necessary, to offer themselves as aldermanic candidates. It was voted to petition the State Assembly for a change in the time of holding the city charter election, from April to July; the present arrangement being as though the New York city election were held in July, when the property-holders are away from town, since the heavy tax-payers of Newport are in April almost all of them absent from Rhode Island. A committee was chosen, with full powers, consisting of Messrs. J. N. A. Griswold, H. G. Marquand, and Jas. P. Kernochan, of New York, Thomas Coggeshall (Postmaster of Newport), and Clark H. Burdick (Representative from Newport in the Rhode Island State Assembly). The change desired is now a foregone conclusion, and Newport can look forward to becoming eventually the most satisfactory place to live in in all America.

In carrying out its original intention, and the several details of its plan, which was sufficiently described in the former volume of the Transactions of the American Public Health Association, the Newport Sanitary Protection Association has issued the following "Circular Letter," a copy of which is sent each year to all the strangers who come to Newport to occupy a "cottage" during the season: —

The sanitary condition of houses and cities has been, for the past few years, occupying the attention of physicians, sanitarians, and scientific minds throughout the civilized world to such an extent, that all intelligent men are now keenly alive to the importance of proper sanitary surroundings, and especially the sanitary condition of their own individual habitations. The questions now arise in the minds of every one, whether they are occupying houses of their own, or hired houses, or are about to seek a new house: —

(*a*) Are the sanitary surroundings of the house perfect? Do the trees and shrubbery permit sufficient exposure of it to the sun?

(*b*) Is the water pure and drinkable? If from a well or cistern, has it connection with the external air?

(*b*^{1}) Is there direct connection, for cooking and table use, where city water is employed, between the main and the kitchen?

(*c*) Is the cellar dry, well ventilated, and free from decomposing matter which may

give forth seeds of sickness and death, and has it a drain? This drain must be wholly unconnected with any sewer.

(*d*) Is the cellar air entirely excluded from the air supply of the furnace?

(*e*) Has every bed-chamber free ventilation and direct means of communication with the external air?

(*f*) If contagious or infectious disease has occurred in the house, have the sick chamber, etc. (bedding, wearing apparel, curtains, carpet, and upholstered furniture), been thoroughly disinfected, and the wall paper removed?

(*g*) Has each water-closet means of external ventilation, and not into an entry or bed-chamber?

(g^1) Is provision made for ventilation of the interior space of the water-closet, by a current of air flowing through the same to a ventilating pipe or flue, passing above the house-top, and independent of the soil-pipe or its extension?

(*h*) Are the soil-pipes in a sound condition, and easily accessible for examination? Are they of iron, with lead-plugged joints (the only true condition for a properly constructed soil-pipe)? or are they of lead? and, if of lead, have they been in the house for a number of years, and thus perforated with holes through which sewer-gas escapes into the house?

(*i*) Has the soil-pipe a proper vent through the roof?

(*j*) Is the soil-pipe in its exit through the foundation of the house of iron or of earthenware? If of the latter is it broken off in or just outside of the foundation, so as to allow the sewage matter of the house to find its way throughout the foundation (a condition which is almost always found to exist where earthenware pipes are used)?

(*k*) If there are set bath-tubs, basins, or wash-tubs, are they securely trapped? Is the kitchen sink safely trapped? It must not be forgotten that the ordinary bell-trap does not perfectly exclude sewer-gas, which its water absorbs and transmits, and that the S trap is liable to be "syphoned," or emptied by inward suction, so as to permit the escape of gas into the house from the soil-pipe or drain.

(*l*) Is the waste-water pipe of the refrigerator entirely cut off from all connection with the soil-pipe?

(*m*) Is the cesspool near the foundation wall? is the cesspool a loose one? and is there any overflow, or leakage into the foundation, cistern, or well?

The following is the annual report of the Sanitary Protection Association for the present year, by Dr. John P. Curley, Recording Secretary, The receipts of the Newport Association during the year 1881–82 were $937.48, and the expenditures $775.61, leaving a balance in the treasury of $161.87.

During the year 1881–82 there has been a continuation of that marked change in the public sentiment regarding sanitary needs, which is the confessed result of the establishment of the Association. There have been accessions of many new members, and inspections of a long series of premises that had, and that had not, been previously examined. The recommendations of your inspecting officers are now, almost without exception, gladly received and carried into immediate effect, and there is reason to believe that many houses have thus been rendered more healthy, and the families of members preserved from much obscure disease, otherwise unavoidable.

The monthly meetings of the council have been regularly held, and there have been frequent and important discussions of the faulty conditions in plumbing and drainage, discovered by the house inspections. In two instances these have resulted in formulæ being determined upon for observance in every household, and they have been directed to be added to the list of questions propounded to the owners and occupants of dwelling-houses, in the "Circular Letter No. 1" of the Association. They are as follows: —

(b^1) (Adopted June 13, 1882): "Is there direct connection, for cooking and table use, where city water is employed, between the main and the kitchen?"

(g^1) (Adopted September 13, 1881): "Is provision made for ventilation of the interior space of the water-closet, by a current of air flowing through the same to a ventilating pipe or flue, passing above the house-top, and independent of the soil-pipe or its extension?"

It is gratifying to be able to state that the new medical society, established during the past year by the physicians of Newport, is interesting itself in sanitary subjects. The purity of the bovine vaccine matter, now so universally employed, has already received its attention, and it has under consideration at the present moment the almost indiscriminate and public sale of poisons, such as arsenic, morphine, and the like, in violation of an existing statute, and also the necessity of having the important office of coroner filled by persons with a reasonable knowledge of the intricate questions that at any moment are likely to come before them.

Since the last annual meeting there have occurred four matters of especial interest to the Association. They are, —

The house-to-house survey of the city under the joint auspices of the National Board of Health and the Association;

The localized epidemic of small-pox in January, February, and March;

The election by the people of a "reform" Mayor; and

The acquirement by the Newport water-works, under a recent act of the Assembly, of the Hanging Rock pond, by which not only is a large accessory supply of water gained for the city, but an opportunity rendered possible for those radical measures for the improvement of the water itself which it had become necessary for the Association to advise should be made, in consequence of its own analyses and those of the National Board of Health.

To each of these topics, which have been detailed at length in the monthly reports of the meetings, brief allusion will now be made.

In a previous year the occurrence of small-pox at Fall River, happily prevented by the Board of Health of that city from extension beyond its limits, had seemed to your council a danger of such importance as to warrant their calling the attention of the city authorities of Newport to the necessity of providing against the possible appearance of the disease in this city, by enforcement of the State ordinance relative to vaccination, which, in a time of apparent security, it was found had been disregarded. Your warning was unheeded, and the general small-pox epidemic of 1882 found Newport wholly unprepared. Some six or seven cases occurred, of which three, or nearly one-half, — a large relative mortality, — were fatal.

The belief generally obtained that there had been laxity on the part of the Mayor and Aldermen as a Board of Health; possibly not intentional, but through want of knowledge how to meet the emergency.

It was held that there had not been that general vaccination, isolation of the sick, and disinfection of tainted premises, that are now thought essential; and that the three lives lost, of men in the prime of life, heads of families, and in every way good citizens, was a fearful price for the city to pay to official apathy and indifference.

It is not improbable that this feeling had something to do with the removal of the Mayor at the ensuing election, Mr. Franklin, the present incumbent, being thought to be in harmony with a less obstructive, wrongly called conservative, public sentiment, and therefore selected by those who desire an orderly, decent, and healthy city.

During the previous two years the City Council had thrown all the odium of their inactivity, if not their negligence, upon His Honor Mayor Slocum. It remains to be seen how cordial a support these same gentlemen, whose personnel has hardly been changed, will give Mayor Slocum's successor in matters affecting the public health.

So far from lessening their official dignity by so doing, in no more certain way could they retain the support of their constituents.

Since the first introduction of the water of Easton's pond into the city, it has been evident that the quality of the water, while excellent in most respects, was not unexceptionable, there being present at all times, but especially in the warm months of the year, an excess of vegetable matter in a more or less advanced stage of decomposition. From the necessities of the case the pond as at present existing is shallow, the water quickly warms by the sun, fresh-water *algæ* grow with rapidity, and late in the season in large quantities decay. And

besides, though the pond bed is of sand, there exists in one portion of it a deposit of mud, which must eventually be removed. The former proprietor of the works, Mr. George H. Norman, a member of this Association, and subsequently his successors, the water company, have shown every desire to improve the quality of the water, and have courteously received the suggestions made to them from time to time by your council, to whose approval of the city water, as compared with the Newport wells, the progressive disuse of the latter is in great measure to be attributed. It has been impossible until now for the water company to make such changes as had been indicated, as it would not have been safe to shut off the supply of the city from Easton's pond until another, to take its place, had been provided.

This has now been effected, under the act of the Assembly, through a hearing before the Supreme Court, whereat it was shown that the necessities of the city required an additional and purer source of supply. It is more than likely that the evidence afforded at the hearing upon both these points, on behalf of this Association, had its weight with the court.

Through the decision rendered, a second, deeper and colder, pond is now under construction at the Hanging Rock, connected with the city by a separate main, and with a capacity of one hundred million gallons, and there is reason to expect that the water supply of Newport will soon be beyond all cavil.

The house-to-house survey of the city, made by the National Board of Health, at the request of this Association, and at the expense of its members, resulted in one respect unexpectedly.

The survey was in part undertaken to prove the correctness, which had been denied, of the assertion by your council that there were sources of serious danger to the public health in Newport. It proved not only that such was the case, but that these dangers had been underestimated, even by those most familiar with the facts, and that others existed of which even they had no conception. The surveys were conducted with great thoroughness, by Mr. Bowditch, of Boston, and his assistants, and many photographs were taken of faulty plumbing work and bad hygienic surroundings. It was supposed by the council that, in accordance with the terms made between it and the National Board, the report would be published immediately upon its completion. Several months, however, have elapsed since the report was said to have been rendered. Meanwhile the council have been requested by the National Board to temporarily withhold from publicity the series of analyses, more than seventy in number, of the city and well waters of Newport, made during the progress of the survey, an authenticated copy of which has come into their possession, possibly upon the ground that it would be more proper that their original publication should be made by the National Board itself, officially, and at Washington.

A large mass of material of many kinds, bearing upon the public and private sanitation of Newport, was collected by the inspectors during the survey, and it was understood by your council that a duplicate copy of all this various evidence was to be placed in their custody for the purposes of the Association. It has been thought that the delay till of late of the National Board has been owing in part to the call that the small-pox epidemic had made upon its energies, to a fear lest official statement of the real sanitary condition of Newport might wound the sensibilities of some of its citizens, and to alarm expressed by the water-works company lest the character of their supply would be irretrievably injured if the truth were fully told. Two of these reasons, however, no longer exist, and the third is not well founded.

In a recent report by its inspectors upon the sanitary condition of the city of Philadelphia, the National Board has not hesitated to state in detail the very great evils there existing, a knowledge of which must ever precede their removal.

It is most probable, therefore, that the report of the Newport survey has been merely awaiting its turn upon the file of papers of the National Board for publication; especially since there is reason to believe that a weekly series of analyses of the city water have since been continuously made under its direction, in verification of those at first rendered to the National Board by its own analyst, and corroborative of the monthly ones regularly sent to the council by the analyst of the Association.

Unfortunately, within the last ten days, a copy of the following circular has been re-

ceived from the National Board: "Washington, D. C., July 1st, 1882. Insufficient provision having been made in the Sundry Civil Appropriation Bill for the year ending June 30th, 1883, for the proper continuance of the duties of the National Board of Health, you are respectfully notified that the publication of the bulletin," and presumably the other publications of the Board, "will be at once suspended should the bill pass as reported to the House."

In view of all these circumstances it remains for the Association to take such action concerning the whole matter as may seem most desirable for the public good. Possibly it may decide to ask from the National Board the copy of the report, and the accompanying evidence, to which it is entitled by the compact that was made, and to entrust the further consideration of the subject to the discretion of the council of the Association.

Advices from the National Board of Health, subsequent to the date of the above report, are to the effect that the details of the house-to-house survey of Newport, will soon be placed in the possession of the Sanitary Protection Association, thus enabling its council to act in accord with, and afford very material assistance to, the new city Board of Health that is probably soon to be established. The recent check — but temporary, it is to be hoped — received by the National Board of Health, at the hands of an ungrateful Congress, affords a commentary upon the inherent weakness of all official boards appointed by such a free and independent people as our own. To national, state, city, or even village boards, the aid of volunteer associations may at some or another time prove invaluable.

The charter of the Newport Association is herewith presented (Appendix A). It will be found of great value in the establishment of similar societies, as it is always of importance that the society as such, and its individual members, should be fully protected against annoying and perhaps punitory actions in courts of law.

There is also appended the report recently rendered to the Sanitary Protection Association by Profs. Pumpelly and Hills, and the writer, upon the dangers of impure ice. The importance of this subject is such that it cannot too forcibly be brought to the attention of sanitarians. The following expression of opinion by the eminent English chemist, Mr. E. Frankland, regarding the biological researches that have been conducted in Newport, under the auspices of the National Board of Health and the Sanitary Protection Association, will be read with interest in the present connection. It is taken, by permission, from a letter from Mr. Frankland to Prof. Raphael Pumpelly. "Through the kindness of a friend," says Mr. Frankland, "I have obtained on loan copies of the researches on 'The filtering capacity of soils,' and on 'The dangers of impure ice,' by yourself, Dr. Smyth, Wm. B. Hills, and Dr. H. R. Storer. These papers have interested me intensely, and I cannot conceive why the first of them, which dates fifteen months ago, should have remained unknown in England so long. From a short study of this paper I consider it to be one of the most important contributions ever made to our knowledge of the propagation of epidemic diseases."

APPENDIX A.

STATE OF RHODE ISLAND, ETC.

IN GENERAL ASSEMBLY, JANUARY SESSION, A.D. 1879.

AN ACT TO INCORPORATE THE SANITARY PROTECTION ASSOCIATION OF NEWPORT.

It is enacted by the General Assembly, as follows: —

SECTION 1. Samuel Powel, Francis Brinley, Thomas Coggeshall, W. S. Child, S.T.D., George Bowen, Philip Grace, D.D., Lucius D. Davis, Francis H. Rankin, M.D., E. M. Stedman, Charles A. Brackett, D.M.D., Horatio R. Storer, M.D., and their associates and successors, are hereby made a corporation by the name of the SANITARY PROTECTION ASSOCIATION OF NEWPORT, R.I., for the purpose of securing the proper sanitary condition of their own dwellings, and of any other buildings or premises in said Newport, so as to aid in promoting the sanitary condition of the said city, with all the powers and privileges, and subject to all the duties and liabilities set forth in Chapter 139 of the General Statutes and in any acts in amendment thereof or in addition thereto; provided, always, that nothing herein contained shall confer any power to enter buildings or premises, or do anything therein, without the consent of the owners and occupants thereof respectively.

SECT. 2. Said corporation may take, hold, and transmit personal and real estate to an amount not exceeding Five Thousand Dollars.

SECT. 3. This act shall take effect from and after its passage.

I certify the foregoing to be a true copy of "An Act to incorporate the Sanitary Protection Association of Newport," passed by the General Assembly of the State of Rhode Island, April 9, 1879.

In testimony whereof I have hereunto set my hand and affixed the seal of the State aforesaid, this fourteenth day of April, A.D. 1879.

JOSHUA M. ADDEMAN,
(L.S.) *Secretary of State.*

APPENDIX B.

THE DANGERS OF IMPURE ICE.

REPORT OF THE SANITARX PROTECTION ASSOCIATION OF NEWPORT, R.I., UPON THE PURITY OF THE ICE SUPPLY FROM ALMY'S POND.

BY PROFS. RAPHAEL PUMPELLY, OF THE U.S. GEOLOGICAL SURVEY (Chairman), WM. B. HILLS, OF HARVARD UNIVERSITY, AND DR. H. R. STORER.

The committee appointed to examine, for the benefit of the Newport Sanitary Protection Association, into the quality of the ice supply from Almy's pond, has to report as follows:—

Your committee has examined the pond and its surroundings, and find that, besides a certain amount of agricultural drainage, it also receives the local sewage from a number of barn-yards and privies, and also the direct drainage of the overflow from a number of cess-pools belonging to houses situated on the west side of Bellevue avenue, and south of Wheatland avenue, which finds its way into the pond by a drain running through Wheatland avenue.

Samples of water and of ice were taken by the Secretary of the Association, Lt. Com. Stedman, when it was being cut upon the pond. These samples were submitted to Prof. W. B. Hills, of the Harvard Medical College, Boston, analyst of the Association. (Prof. Hill's report is attached hereto, as second Appendix A.)

It is proper to say, with regard to chemical analyses of water or of ice, that in the present condition of our knowledge of the subject, neither chemical analyses, nor, in most cases at least, microscopic investigations, are able to point out specifically the causes of epidemic diseases produced by the use of infected waters.

The whole weight of the evidence produced by modern investigations is in favor of the existence of a close genetic relationship between the presence of certain low forms of vegetal life and the epidemic prevalence of many diseases, both of mild and fatal kinds.

This evidence also shows very conclusively that the germs of these forms, which have produced or accompanied the disease in the human body, retain their capacity for infection after having been excreted.

It becomes, then, important to know whether the germs can retain their vitality and specific adaptability for infection after having passed into the condition of sewage, and under conditions of varying temperature, moisture, and dryness.

Experiments made by Pasteur and other biologists have shown that while the adult forms of bacteria are killed by variations of a few degrees of temperature, their germs will often withstand a temperature of boiling water on the one hand, and many degrees below freezing on the other. Under the conditions of moisture and nourishment they develop rapidly succeeding generations; while, on the other hand, they may remain in a dried condition for many years, to be brought again into activity when subjected to moisture.

There is, therefore, little doubt that when they accompany sewage matter they go wherever this goes, excepting where the sewage frees itself from its impurities by percolation through a filtering medium.

The experiments made by the chairman of your committee and his associate, Dr. Smyth, for the National Board of Health, have proved conclusively that even extremely fine sand possesses no filtering capacity for the germs of these low forms of life, and that most soils possess such filtering power *only to a slight extent.* Thus in nearly all cases these germs must accompany the water from the beginning of its journey, from the cesspool, to its end in the stream or pond or ocean, excepting where taken up to sustain plant life.

The value of chemical analysis is largely shown in this, that it detects the presence of an abnormal amount of organic matter; this matter may be harmless, or it may indicate the presence of sewage, and in any event should lead to an examination to determine its source.

Prof. Hills has pronounced the water unfit for drinking purposes, and there can be no doubt that, as far as the question of drinking-water is concerned, any pond of the dimensions and depth of Almy's pond, which receives even the present amount of sewage that flows into it, should be pronounced dangerous for this reason alone, and still more so, from the possibility that at any time this sewage may contain contribution from sources contaminated by typhoid fever or other zymotic diseases.

The next question that your committee has to consider is this: —

Does water in the act of becoming ice free itself from impurities?

Water in freezing undoubtedly frees itself from substances which in solution will necessarily give a fluid of a specific gravity greater than water alone, and also from those fluid substances which require a lower temperature for congelation.

But even in these cases the frozen water retains traces of these substances more or less entangled throughout its mass and solid particles floating in suspension or entangled in the ice, and these vary in size from a floating carcass, or fæcal matter, down to the extremely minute germs of infectious bacteria.

Experiments have been made for your committee to determine whether pond ice contains living germs.

Ice taken with great care from the centres of blocks and introduced into sterilized infusions of beef produced rapid putrefaction, thus giving a positive affirmative answer.

There can be no doubt that whatever objection attaches to the use of contaminated drinking-water attaches equally to ice frozen from it.

Indeed the objection would seem to be greater to the ice.

For dead organic matter entering water during the warm season is decomposed and more or less used up to nourish plant and animal life; while in winter the low temperature preserves it, thus permitting an accumulation which, floating near the surface, may supply a more foul water for the ice.

This supposition is confirmed by Prof. Hills' analyses, as will be seen from the following remarks by Dr. Gooch, Chemical Assistant of the U. S. Geological Survey, to whom I submitted the analyses for an opinion on this point: —

"It may be inferred from a comparison of these analyses that a considerable, though varying proportion, of the impurities of the water are included in the ice which forms on its surface. It follows at once, of course, that unless it can be shown that germs of disease are not subject to inclusion like ordinary forms of matter, the ice from water contaminated with sewage must be unfit for use.

"It is noteworthy that the amount of *albuminoid ammonia* in the ice from Almy's pond is slightly in *excess* of that found in the water. The proportion, too, of the total volatile residue of the ice to that of the water is unusually large."

In view of the fact that Almy's pond is already contaminated by direct inflow of sewage, your committee recommends very strongly to all members of the Association that they avoid the use of ice from that source for all purposes, even for refrigerators.

Your committee finds that Lily pond is singularly free from all the objections that attach to Almy's pond, and recommends the ice therefrom.

We would add that a representative of the Newport Ice Company (the lessees of Almy's pond) has stated that the Company is anxious to act to any reasonable extent with the Association in insuring a supply of pure ice.

Appended to this report will be found the following documents: —

2d Appendix A. Report of Professor W. B. Hills.

" " B. } Communications from Dr. H. R. Storer, a member of this committee,
" " C. } to Ex-Mayor Burdich, its former chairman.

Respectfully submitted,

RAPHAEL PUMPELLY, *Chairman of the Committee.*

SECOND APPENDIX A.

HARVARD MEDICAL COLLEGE, CHEMICAL LABORATORY,
BOSTON, February 3, 1881.

E. M. STEDMAN, *Secretary Sanitary Protection Association, Newport:* —

SIR, — I enclose to you the results of my analyses of samples No. 10 (water from Almy's pond), and No. 11 (melted ice from Almy's pond), received from you January 18, 1881. The analyses were made the following day.

There is, as I understand it, no question in regard to the suitability or non-suitability of the pond water for direct domestic use. It is well to state, however, that it presents, in general, the characteristics of the water of most small ponds. It contains a large amount of organic matter, indicated in the report; first, by the "albuminoid" ammonia, which is several times larger in amount than it should be in a drinking-water; second, by the large organic residue obtained on evaporating the water. The "free" ammonia is also excessively high, and is doubtless derived from the decomposition of organic matter, for the most part.

Most of the organic matter contained in this water is undoubtedly vegetable matter. Unfortunately it is not possible to say, from the analysis, whether any of it is derived from sewage. We are obliged to depend upon the determination of the chlorine in water, to decide whether organic matters are animal or vegetable. If, with the large amount of "free" and "albuminoid" ammonia which we find in this water, we also find a large amount of chlorine, *which cannot be due to natural causes*, we should say at once that the water is contaminated with sewage. But all Newport waters contain considerable chlorine, on account of their proximity to the sea. The large amount in this water is derived chiefly from the sea, without any doubt, and we cannot say but that it all is. The chlorine then affords us no solution of the problem. In this particular case, however, the question of chlorine is of no great importance perhaps, for, if we assume that *all* the organic matter is of vegetable nature, the amount is sufficient to condemn the water for direct use.

We know that a certain amount of sewage is entering this pond. It is possible that, if this pond was outside the influence of the sea, the amount which has thus far entered may not have been sufficient to render its presence known by any excessive amount of organic matter, or any marked increase of chlorine. It is diluted to a great extent on entering a large volume of water, and may be diluted so far as to be beyond the reach of chemical analysis at present. But it would not be safe to say that it is harmless, simply because it is

diluted to a certain extent. Moreover this pond is shallow and of limited area, and it is only a question of time, if sewage continually enters it, when the presence of sewage becomes evident to chemical analysis, *i.e.*, on the supposition that it is so far from the sea that the chlorides from the sea cannot enter it. It is also to be borne in mind that the most dangerous contamination of all (that due to the germs of diseases) cannot be detected by any means. Should typhoid fever break out in the settlement which empties its sewage into this pond it would be impossible to detect the typhoid germ in the water. It would not, I think, be possible to find many scientific men who would not say that the water was unfit, under such circumstances, for drinking purposes. The possibility, then, of such a condition of things should lead us to abandon the water.

I have spoken at some length of the fitness of this water for drinking purposes, because I do not consider it proper to take ice for consumption from a pond, the water of which is unfit for drinking purposes. Even if ice purified itself by freezing, I should still be opposed to taking the ice from such a pond on principle. It is a fact, however, known now to all scientists, that ice does not completely purify itself by freezing. If the ice is from a shallow pond, containing much floating organic matter (vegetable), it may become mechanically enclosed by the ice, and when the ice is melted may be seen in the form of *suspended* matter. Melted ice may, however, contain a considerable quantity of substances, both organic and inorganic, *in solution*. In proof of this it is only necessary to call your attention to some analyses of ice which I enclose, and which I have taken from some of the Massachusetts State Board of Health Reports. You will notice that even the *filtered* waters contain, in solution, both organic and inorganic matters, in some cases in considerable amount.

As to the ice from Almy's pond but very little need be said if the sample sent me is a fair sample. You will notice from the analysis that it contains a large amount of organic matter, shown by the "albuminoid" ammonia and the organic residue. The "albuminoid" ammonia, even if it was much less than it is, shows a degree of organic contamination sufficient to absolutely condemn it for drinking purposes. The melted ice contains a large amount of organic matter in suspension. This does not settle readily, and much of it would be drunk by persons using the ice as it is ordinarily used for drinking purposes. Even filtering does not remove it entirely. For the filtered water has a white, opalescent appearance, due to the presence of a portion of this organic matter in a finely divided form.

Most of the organic matter present in this ice is undoubtedly vegetable. Whether any of it is animal, it is no more possible to say than it was in the case of the pond water, for the chlorine may have been entirely derived from the sea.

The organic matter in the ice is in a more or less decayed condition. The odor perceived when the stopper was removed from the jug was very disagreeable, and is still evident after the jug has remained unstoppered for several days. This fact makes the water still more unfit for use. I think the citizens of Newport can do no better than to try this simple experiment, in order to convince themselves that the ice is contaminated. ' Break a cake into small pieces, put them into a demijohn, and stopper it up till the ice is melted. If the odor is as marked as in the sample received by me, they can hardly fail to be convinced of the impropriety of using the ice.

If the sample examined is an average one, I should not be surprised if it not only produced bad effects in many of those using it in drinking-water, but also had an injurious effect in tainting the atmosphere of the ice-chests in which it will be put by those using it.

I must emphatically advise that it be not used for either purpose.

The analyses of ice which I enclose are intended chiefly to show that ice may contain considerable impurity, and that water is not completely purified by the process of freezing. In regard to No. 1, however, I will say that it is an analysis of the ice used at one of the hotels at Rye Beach, in 1875, and that twenty-six out of about five hundred persons using it were rendered seriously ill. The case was investigated very thoroughly, the proprietors of the hotels readily assisting, and the trouble was found beyond a doubt to be due to the ice, and ceased when the use of the ice was discontinued. It is interesting as being the first case where sickness was distinctly traced to the use of contaminated ice.

Of the samples Nos. 1–5 inclusive and No. 11 would be considered impure ice.

Very truly yours,

WILLIAM B. HILLS.

[Figures express parts per 100,000 of water.]

No. 10. Water from Almy's pond: Free ammonia, 0.060; "albuminoid" ammonia, 0.048; chlorine, 7.8. Residue, — fixed, 13.; volatile, 11.; total, 24.; hardness, 5°.

Water was of the brown color seen in most pond waters, due to vegetable matter in solution. It contained a small amount of suspended material. Much charring on ignition of solid residue.

No. 11. Ice from Almy's pond: Free ammonia, 0.0066; "albuminoid" ammonia, 0.0496; chlorine, 0.05. Residue, — fixed, .5; volatile, 6.0; total, 6.5.

The water from the melted ice contained a large amount of suspended material, and had a very disagreeable odor.

Location.	Free Ammonia.	"Albuminoid" Ammonia.	Chlorine.	Residue.		
				Fixed.	Volatile.	Total.
1. Rye Beach Ice, 1875. Analyses by W. R. Nichols .	*a.* 0.0208	0.0704		7.80	5.72	13.52
1. Do. do. do.	*b.* 0.0212	0.0165	3.23	6.88	2.84	9.72
2. Horn Pond, Dec. 3, 1876. Dr. E. S. Wood	0.0026	0.044	0.4	1.6	7.6	9.2
3. Hammond's Pond, Jan. 23, 1877. Dr. Wood . . .	0.0066	0.019	—	1.	1.4	2.4
4. Jamaica Pond Ice Co., Feb. 12, 1877. Dr. Wood . .	0.018	0.016	0.3	0.4	0.4	0.8
5. Do. do. do.	0.026	0.016	0.3	0.4	0.8	1.2
6. Fresh Pond water, Jan. 11, 1878	0.0128	0.0192		9.	3.	12.
6. Fresh Pond ice. S. P. Sharples	0.0060	0.0075		3.50	1.50	5.
7. Spy Pond water. S. P. Sharples	0.0640	0.0128		13.	4.	17.
7. Spy Pond ice. S. P. Sharples	0.0064	0.0064		3.50	1.50	5.
8. Little Spy Pond water. S. P. Sharples	0.0160	0.0226		7.	4.	11.
8. Little Spy Pond ice. S. P. Sharples	0.0050	0.0060		1.50	1.	2.50
9. Pond Hole, Slaughter House, Fresh Pond water .	0.352	0.1472		7.	10.	17.
9. Pond Hole, Slaughter House, Fresh Pond ice .	0.0060	0.0090		1.	1.50	2.50
6 to 9 inch = water and ice taken at same time and place. Experiments to see to what extent water is purified by freezing. Prof. Nichols	*a.* 0.0072	0.0061		0.93	0.58	1.51
10. Silver Lake, Pittsfield, Feb. 21, 1876	*b.* 0.0077	0.0013	0.02	0.30	0.14	0.44
11. Silver Lake, Pittsfield, Jan. 22, 1881. W. B. Hills.	0.0266	0.078	0.37	*a.* 2. *b.* 1.	*a.* 4. *b.* 2.5	*a.* 6. *b.* 3.5
12. Boston Ice Co. W. R. Nichols	0.0045		Less than 0.02	0.45	0.31	0.76

In Nos. 1, 10 and 11, *a* = unfiltered, *b* = filtered.

SECOND APPENDIX B.

39 WASHINGTON STREET, NEWPORT, Dec. 22, 1880.

DEAR SIR: — I duly received your letter. Ice unfit for ordinary domestic purposes ought to be also unfit for butchers' use, even if only employed so that there is no direct contact with the meats.

The question of ice impurity is evidently quite a new one. The following is all the evidence that I have been able, as yet, to find upon the subject, with the assistance of Dr. Rankin (a member of the committee), Dr. Bowditch, of Boston (late Chairman of the Mass. State Board of Health), and Dr. Mackie, of New Bedford, Health Officer of that city. Dr. Rankin was kind enough to drive with me to the pond.

In the first place, and as general statements: —

"As applied to sewage, disinfectants do not disinfect, and filter-beds do not filter." — *Report of the First Rivers Pollution Commission, England.*

"No sewage of any kind, whether purified or not, should be allowed to enter any pond or stream used for domestic purposes. There should be absolute prohibition in all cases against casting sewage or filth of any kind into any stream or pond used as a source of water supply. Where such conditions now exist, the sewage or filth should be diverted to some other channel. For, until our knowledge has so far advanced as to enable us to recognize 'germs' of disease, and to destroy them effectually by some simple and easy process, even purified sewage must always be looked upon as a dangerous addition to drinking-water." — *General Report of Mass. Board of Health, 1876*, p. 12.

Now, as to ice: —

1. The ice supply of Pittsfield, Mass., from "Silver Lake," one of the sources of the Housatonic river, came under suspicion in 1875. Several analyses were made, as follows, by Prof. Wm. Ripley Nichols, of the Massachusetts Institute of Technology: —

DATE.	Free Ammonia.	Albuminoid Ammonia.	Inorganic.	Solid Residue.		Chlorine.
				Organic and Volatile.	Total at 212° Fahrenheit.	
Nov. 31, 1875.* *Water* from Lake .	.021	.020	10.28	2.60	12.88	.26
Feb. 16, 1876.† " " .	.018	.0152	10.32	2.72	13.04	.30
" " ‡ " " .	.022	.014	11.92	2.60	14.52	.35
" " § " " .	.020	.0136	11.60	2.68	14.28	.38
Feb. 21, 1876. *Ice*, unfiltered . .	.0072	.0061	.93	.58	1.51	. . .
" " " filtered . . .	.0077	.0013	.30	.14	.44	.08

* and † from surface, at middle of pond. ‡ Half way, between surface and bottom. § From bottom.

The sources of pollution were several dwellings and two factories, one of which emptied the overflow of a cesspool used by the employés. The pond covers about twenty acres.

Dr. Frederick Winsor, in charge of the "Water Supply, Drainage and Sewerage of Massachusetts, from the Sanitary Point of View," thus sums up his report concerning this ice: "From the results of analysis it will be seen that the ice is considerably purer than the water of the pond, thereby showing that the process of freezing does tend, to a considerable degree, to purification. Chemical examination alone does not indicate that the ice is unfit for domestic use, nor does it ordinarily detect a very slight degree of pollution, which may be offensive to our sense, from the fact that we previously knew of its presence. Considering (therefore) the great dilution of filth which may often take place without securing immunity from disease, consequent upon taking such filth into the system, there can be no question as to the propriety of putting a stop to this contamination at once." — *Appendix to James P. Kirkwood, C.E., Special Report on the Pollution of Rivers, Seventh Annual Report Massachusetts State Board of Health.*

The evidence thus far is putative merely. That now given is positive.

2. At Rye Beach, N.H., there broke out during the summer of 1875, at one of the large hotels, an extensive, though strictly localized, epidemic of fever, with both intestinal and general symptoms. A most rigid examination of the premises having failed to reveal any fault, the inquiry was committed to Dr. A. H. Nichols, of Boston, who had also charge of the cases of sickness. They were all traced to the use of ice from a pond, so identical in many of its conditions with Almy's pond in Newport, that I quote the description: —

"The pond is a flooded marsh of irregular outlines, about two-thirds of a mile in length, and varying in width from two hundred to eight hundred feet, with a uniform depth of about two feet. There had formerly existed an artificial channel, by means of which was maintained a direct communication between the pond and the ocean; but this channel had been filled with sand and stones, thrown up during heavy storms by the action of the sea, which drives in here with extreme violence. Of late, therefore, the pond has become practically stagnant, although a small quantity constantly percolates a bank of gravel separating the pond from the ocean." Marsh-mud and decomposing sawdust were the special faults found.

The following comparative tables give the results of the analyses, which, like those at Pittsfield, were made by Prof. Nichols, of the Massachusetts Institute of Technology: —

Water from Pond at Rye Beach.

Component Parts.	Results expressed in parts per 100,000.	Results expressed in grains to U. S. gallon.
Ammonia	.0197	.0115
Albuminoid Ammonia	.0597	.0348
Inorganic Matter	64.96	37.88
Organic and Volatile Matter	8.	4.66
Total Solid Residue at 212° Fahr.	72.96	42.54
Chlorine	34.00	19.83
Equivalent to Chloride of Sodium	56.03	32.68
Oxygen required to oxidize organic matter	1.28	.75

Ice from Pond at Rye Beach.

Component Parts.	Results expressed in parts per 100,000		Results expressed in grains to U.S. gallon.	
	Unfiltered.	Filtered.	Unfiltered.	Filtered.
Ammonia	.0208	.0213	.0121	.0124
Albuminoid Ammonia	.0704	.0165	.041	.0096
Inorganic Matter	7.80	6.88	4.55	4.01
Organic and Volatile Matter	5.72	2.84	3.33	1.66
Total Solid Residue at 212° Fahr.	13.52	9.72	7.88	5.67
Chlorine	....	3.23	....	1.88
Oxygen required to oxidize organic matter	....	.334	....	.495

Dr. Nichols concludes his report thus: —

"The notion that ice purifies itself by the process of freezing is not based upon trustworthy scientific observations. On the contrary it is utterly wrong in principle to take ice for consumption from any pond the water of which is so fouled as to be unfit for drinking purposes." — *Seventh Mass. State Report*, p. 472.

To aid you in forming an opinion concerning the ice from Almy's pond, after an analysis of the water and ice therefrom shall have been made, I append tables (the "mean of a number of determinations") showing the constituents of *Cochituate* water and ice (the Boston supply), usually noted for its purity.

Cochituate Water.

Component Parts.	Results expressed in grains to U.S. gallon
Ammonia	.002
Albuminoid Ammonia	.0068
Inorganic Matter	1.61
Organic and Volatile Matter	1.22
Total Residue at 212° Fahr.	2.83
Chlorine	.18
Equivalent to Chloride of Sodium	....
Oxygen required to oxidize organic matter	....

Cochituate Ice.

Component Parts.	Results expressed in parts per 100,000.	Results expressed in grains to U.S. gallon.
Ammonia	.0045	.0026
Albuminoid Ammonia	....	....
Inorganic Matter	.45	.26
Organic and Volatile Matter	.31	.18
Total Solid Residue at 212° Fahr.	.76	.44
Chlorine	Trace, less than .02	Less than .012
Oxygen required to oxidize organic matter	.033	.019

These tables will also aid you when examining those from Pittsfield and Rye Beach.

I have not pursued the second portion of the inquiry marked out in my previous letter to you (*i.e.*, whether sewage from a point distant an eighth of a mile could be neutralized during surface or subterranean flow), for the reason that at Almy's pond there are similar and even greater sources of danger upon the very margin of the pond, a fact of which I was ignorant until informed of it by Capt. Cotton, and my own subsequent visit to the locality.

Yours sincerely,

HORATIO R. STORER.

Mr. Burdick, Chairman of Ice Committee, Sanitary Protection Association.

SECOND APPENDIX C.

39 Washington Street, Newport, Jan. 1, 1881.

My dear Sir: — Having heard from other correspondents, permit me to render to you a supplementary report upon the question of the Almy's pond ice.

I. My brother, who, as Prof. of Chemistry in Harvard University, has to keep himself familiar with everything that is done in these matters throughout the world, writes to me: "I do not remember to have seen any questioning of ice, as to impurity, excepting the work (analyses) of Prof. Nichols, to which you refer. I doubt if the subject has been much studied."

II. Col. Waring, Consulting Engineer of our Sanitary Association, says: "So far as my examination of the subject is concerned, the following seem to be the facts regarding the questions you submit to me: —

"(1). Water containing the germs of typhoid fever does not free itself from such germs by congelation. This, I think, is well established.

"(2.) Ordinary organic impurities, if uniformly diffused through water, are involved among the crystals of ice, and appear in the water after the ice melts, in all respects unchanged. This also, I think, is clearly established."

III. Prof. Raphael Pumpelly, of the United States Geological Survey Bureau, now established in Newport, and a member of our Association, expresses himself as follows: —

"In answer to your questions I beg to say: —

"1st. Water in freezing frees itself from substances which in *solution* with it give a fluid of greater specific gravity than water alone; but it still retains, even of these, more or less, entangled in the ice.

"Substances floating in suspension are entangled in the ice, and to this the microscopic low forms of life, among which are the infectious germs, form no exceptions.

"2d. Ordinary organic impurities are merely preserved from putrefaction during the period of their existence in a frozen condition. Freezing is only a temporary arresting of the processes of decomposition, and these are resumed when the requisite temperature is again attained.

"With regard to the effect of freezing on the specific characters of these low forms of life (the germs of infectious disease), we know that as germs they withstand a pretty good baking and freezing; but I think it is not yet settled whether they lose their infectious characters in these processes.

"In regard to the main question, it certainly seems to me that *no less* care is necessary in maintaining the purity of ice than of ordinary drinking-water; indeed, one should suppose that greater care would be necessary, for the following reason: —

"While, during the warmer season, the dead organic matter carried into streams and ponds is rapidly decomposed, or used up in nourishing plant and animal life, during the cold weather it tends to accumulate, and, owing to its lightness, it may well happen that the ice in forming may entangle so much of it and of bacteria germs (those of infectious disease), as to render the ice much more contaminated than a corresponding amount of drinking-water (from the same source)."

In addition, important evidence has been given by these several gentlemen as to the third and fourth of my inquiries, which were, regarding the danger of contamination of a pond from the overflow of cesspools and a leakage of privies at a distance corresponding with that of the buildings of Messrs. Keene and D'Hauteville; but as there are sources of danger, similar and equal to these, upon the immediate bank, in the case of Almy's pond, I withhold the testimony referred to, as unnecessary for the present inquiry — reserving it, however, for the use of the Association, in case a similar question of the tainting of water, less easy in its decision than this, should hereafter occur.

The following may, however, in this connection, be quoted from Prof. Pumpelly's letter: "The experiments that we are now making, for the National Board of Health, prove that sand, in columns one hundred feet long, possesses absolutely *no* power to retain germs. And I think there is no doubt that what is true of one hundred feet is true of ten thousand feet."

The conclusions, therefore, as it seems to me, that may legitimately be drawn from the evidence we have now obtained, as to the safety of ice from Almy's pond, are the following: —

1. That while the *inorganic* impurities in water (mineral salts and the like), which are those ordinarily detected by chemical analysis, may be partially eliminated, through their specific gravity, during the process of freezing, the purification remains at the best but partial and imperfect. This was proved in the course of the investigations both at Pittsfield and Rye Beach.

2. That the even more dangerous *organic* impurities resulting from human and other animal waste are retained in ice unchanged as regards both quality and quantity, the latter, indeed, being likely to be increased. The privies and cesspools and large barn-yard of the settlement along the margin of Almy's pond are covered by this statement.

3. That the germs of infectious disease, when this appears in such a locality, are retained in ice unaffected, and from their comparative lightness are so concentrated therein as to number, that they exist in even greater quantity than in the same amount of water, under

similar circumstances, at other seasons of the year. The privies and cesspools of the Almy's pond hamlet come under this head also.

4. That ordinary organic impurities thus retained in ice are likely, though there be no technically infectious disease in the neighborhood, to produce serious, and even dangerous, illness in those persons who may use the ice in question for domestic purposes. This was positively proved at Rye Beach.

5. That, though there may not occur a case of infectious disease in the vicinity of Almy's pond for a considerable time to come, yet sooner or later it is quite certain to exist, and then to endanger the lives of all throughout the city, should there be such who should use the ice, more surely, indeed, than were they to drink the water alone.

The last are conclusions that can but imperfectly be affected by chemical analysis; the latter not at all, and hardly even by the microscope as ordinarily employed. It seems, however, the inevitable result of a reasonable, and indeed necessary, induction, and to be, with that preceding it, the decisive points of our whole inquiry.

To the remarkable fact that the important subject that has been submitted to us proves a comparatively new question in science as well as in sanitary protection, it is unnecessary to more than allude.

I trust, however, that in view of this, and of the character of the expert evidence that we have received, you will be able to make at least a partial report at the next meeting of the council.

Though the Ice Company might *intend* to use the ice of Almy's pond only for the coarser purposes of their trade, yet in a season of scarcity like the last, which may at any time again occur, there would be great temptations to sell it for household purposes, and no reliable guarantee that such would not be done.

Sincerely yours,

HORATIO R. STORER.

Mr. BURDICK.

Upon acceptance of the above report, the following vote was passed by the Association: —

"*Whereas*, An examination of Almy's pond by a committee appointed by this Association has shown that said pond receives a considerable amount of sewage; and

"*Whereas*, Chemical analyses of the ice and water of said pond show the presence of much organic material; and

"*Whereas*, Experiments made for this Association have shown that the germs of bacteria are not destroyed by freezing; and

"*Whereas*, An examination of Lily pond has shown that body of water to be exceptionally free from any taint of sewage;

"*Be it resolved*, That this Association recommend to its members that they for the present avoid the use of ice from Almy's pond for any purpose; and

"*Be it further resolved*, That the Newport Ice Company be requested to have painted legibly on their ice carts, 'Almy's pond' and 'Lily pond' respectively, and that the Company be requested to agree to load each cart only with ice from the pond whose name it bears; and that the use of a Lily-pond cart to carry ice from Almy pond shall be considered a violation of the agreement between the Company and the Sanitary Protection Association."

The result has been that during the season of 1881 the residents of Newport received only Lily-pond ice, and the Newport Ice Co. (1882) have surrounded a large portion of Almy's pond by an intercepting sewer, which, it is hoped, will hereafter afford sufficient protection.

VIII.

A HISTORY OF HEALTH-WORK IN INDIANA.

By THAD. M. STEVENS, M.D.,
Indianapolis, Ind.

About thirty-five years ago the physicians of Elkhart, Grant, Noble, and neighboring counties, made an effort to have a law enacted providing for the registration of vital statistics in Indiana; but the bill that was drafted and urged failed to become a law. No attempts in that direction, or for the purpose of obtaining legislation for public hygiene, were made after that period in Indiana, until, on the motion of the writer, a Committee on State Board of Health was formed at the session of the Indiana State Medical Society, in 1875. This committee consisted of, —

Thad. M. Stevens, M.D., *Indianapolis* (*Chairman*).
James S. Athon, M.D., *Indianapolis.*
J. W. Hervey, M.D., *Indianapolis.*
J. W. Burton, M.D., *Mitchell, Ind.*

In 1875 the committee met with a loss in the death of Dr. James S. Athon. To supply the vacancy Wilson Hobbs, M.D., of Knightstown, Ind., was appointed.

Said committee drafted a bill for the establishment of a State Board of Health, and introduced the same in the Legislature of 1875. This bill failed to become a law. The committee introduced a similar bill at the next session; it passed in the Senate, but failed in the House.

The writer, being chairman of the committee, first called the attention of the profession to the necessity of the subject in an article to the State Society in 1875. Until the year 1878 the idea of the formation of a State Board of Health, or the enactment of State laws regarding public hygiene, was too often confounded with efforts to have laws passed regulating the practice of medicine. Seeing the difficulty that would result from such a confusion of subjects, the writer introduced the following resolution, at the session of the Indiana State Medical Society of 1878: —

"*Resolved*, That a committee of three be appointed to draft a bill for the 'Regulation of the Practice of Medicine in Indiana, and also to define the Duties and Privileges of Pharmaceutists and Druggists within the State'; and that such bill shall be put upon the basis of equal recognition of all schools and sects of medicine so far as the examination of candidates for practice and their privileges are concerned, they to have separate boards."

A committee was formed in accordance with such resolution, since which time the two subjects have been intelligently separated.

At the same meeting of the Society the following resolutions were introduced by the writer: —

"*Resolved*, That the Committee on State Board of Health, as now constituted by this Society, shall be called the State Health Commission, with power to associate with them a competent civil engineer, and that the State Geologist shall be an *ex-officio* member of such commission. That the duties of such commission shall be to make investigations as to the causes and means of preventing disease in the State, and that they, at any time they see fit, may petition the Legislature to confer police power, so that they can enforce such measures as they may deem necessary to the object above mentioned.

"*Resolved*, That in cases of vacancies occurring in such Board of Commissioners, they shall be filled by the State Society."

The Health Commission, thus formed, drafted bills to establish a State and Local Boards of Health, and introduced such drafts in each session of the Legislature until that of 1881, when the act under which the present State and Local Boards of Health were organized, was introduced and became a law.

In accordance with the provisions of this act, the present State Board of Health was formed November 3, 1881, by the appointment, by Governor A. G. Porter, of the following gentlemen, as members of such State Board, viz.: —

J. W. Compton, M.D., Evansville, Ind., *President*.
W. W. Vinnedge, M.D., Lafayette, Ind.
J. M. Partridge, M.D., South Bend, Ind.
T. M. Stevens, M.D., Indianapolis, Ind.

Upon the election of Thad. M. Stevens, as Secretary of the Board, Wm. Lomax, M.D., of Marion, Grant Co., was appointed by the Governor to fill the vacancy in the Board caused by such election. At present the members of the State Board are as follows: —

J. W. Compton, M.D., Evansville, Ind., *President*.
Wm. Lomax, M.D., Marion, Grant Co., Ind.
W. W. Vinnedge, M.D., Lafayette, Ind.
J. W. Partridge, M.D., South Bend, Ind.
Thad. M. Stevens, M.D., Indianapolis, Ind., *Secretary and Executive Officer*.

The State Board did not meet again until Jan. 19, 1882; but previous to that time much work was performed, by the Secretary, in the way of organization of Health Boards throughout the State; in instructing County Clerks as to their duty under the act; in making up and issuing forms for blanks, for collection of statistics regarding births, deaths, marriages, and diseases, etc.; and in giving instructions, by circulars and otherwise, as to the duties of health officers, school boards, township trustees, etc., in the

matter of blanks and rules established by the State Board as regards small-pox.

All the blanks for collection of statistics by physicians, accoucheurs, and all rules or instructions issued by the Secretary of the Board, who by law is the health officer of the State, were first submitted to the individual members of the Board for approval and endorsement; and no step was taken without such endorsement by the Board, so that, while in most cases the plan of work originated with the health officer, all his work received the sanction of all or a majority of the Board, and to the State Board is due the credit of any good result; and also the Board is responsible equally with the health officer for any blunders or short comings to be found in such work.

Early in November the President of the Board addressed the Secretary a letter suggesting the early issue of blanks, for collection of statistics of births, deaths, etc., and in company with that letter was one from Dr. Vinnedge, a member of the Board, likewise urging the early issue of such blanks.

In accordance with such instructions, forms of blanks for returns of marriages, deaths, births, and diseases were sent to each member of the Board, and at least three of the four members returned the copy as approved.

The form adopted was similar to blanks issued by the State Board of Illinois, with one or two items selected from blanks of other States. Monthly returns for use of town and city health officers and quarterly returns, the latter as reports to the secretary of the State Board, were made up and issued. The forms of such reports, together with the forms for a record for each town, city, or county, were issued similar in the main to those in use in Iowa. The health officer was directed, by written instructions of the members of the Board, to follow other State Boards in the matter of blanks, records, etc. Such instructions were followed.

We consider the form of blanks in use by physicians, accoucheurs, etc., as well as the monthly and quarterly reports, and also the record book, as in the main as simple in form as the nature of the facts demanded to be collected admits.

Only one of the forms, viz., that of births, do we consider imperfect. A new issue of this form has been ordered, not that any of the items will be omitted, but the spaces made more ample, and wording more easily understood.

While, if the system is good, the State Board should have the credit, and the blank or accompanying instructions should be credited to the Board, at the same time we take the opportunity to distinctly state that if the system is a mistake, or the idea of putting any such system of collecting statistics into operation is a mistake, or if any individual blank is imperfect; while the health officer may in the one case not refuse to accept his share of the credit, he will not, on the other hand, be willing to answer for more than his share of blame that may attach in the issue of such blanks and instructions.

Letters from members of the Board have been filed in proof of the fact that the Secretary was instructed to follow in the main the work of other States, and also that the blank forms were ordered by the Board. And in proof that the special rule of vaccination was endorsed by the Board before issued, a copy of the rule is on file, with their endorsement thereon; and we also possess original drafts of blanks as sent to members of the Board, and returned as endorsed to the Secretary.

A pamphlet containing a copy of the Act creating the State Board of Health, etc., rules of the State Board of Health, a history of the Health Commission, which was the forerunner of the Health Board, a compilation of State Health laws, and a nosological table, was issued by the State Board; and, as proof of endorsement and approval of the members of the State Board, letters are on file.

The health work in this State demands a union of health officers, and those really in favor of such work. Any want of union is not the result of a desire to cripple the work, or to interfere one with another in their several spheres, but comes from the want of knowledge.

The committees of the State have, in consideration of the lack of funds appropriated for the use of the State Board, kindly agreed to furnish material for the performance of the work this first year. The State Board has, in the way of organization of the work and issuing instructions for performance of such, been highly gratified by the prompt and willing acquiescence of the County, City, and Town Health Boards. And the State Board has striven to economize its funds so that next year it will be in good condition for work.

We wish to say that the work for which the State and local Boards of Health were created has progressed in as favorable a manner in Indiana as it has in any other State in the Union, in the same length of time; that we have examples before us that cannot mislead; that no one need fear the result, which will be success, if health officers and friends of the work will only "settle down to work," stop hypercriticisms, and give all ample time to bring forth fruits, and, at the same time, encourage and uphold such officers and workers, and aid them in repelling attacks from the outside, and in keeping down internal dissensions; it is the latter which cripples and destroys.

In view of such promises we present the following resolutions for adoption by this Association: —

"*Resolved*, That it is the true policy of each of the State Boards of Health, in the United States, to collect vital and sanitary statistics.

"*Resolved*, That successful vaccination of all persons before being allowed entrance into school, either as pupils or teachers, should be made compulsory, and no person who has been exposed to any contagious disease should be admitted to any school, public or private, and all such persons should be excluded from contact with all other persons, and that such contact should be controlled by perfect isolation."

The following proposition may be accepted as true, viz. : —

1. That vital statistics is the basis of all true sanitation.

2. That without vital and sanitary statistics our knowledge of the rate and cause of sickness and mortality will be limited, and the remedy in any case to prevent such sickness and mortality will remain unrecognized.

3. That the only modes that are effectual in preventing the spread of contagious diseases are, in small-pox, vaccination, and perfect isolation of all affected and all exposed to contagion, and thorough disinfection. Vaccination should be compulsory; and in scarlet fever, diphtheria, and all other contagious diseases, similar isolation and disinfection are necessary.

Such isolation should extend to the absolute exclusion of all persons *who have lately been exposed to contagion from* all public assemblies, etc., and kept from contact with the unexposed. The isolation of *those only affected with the disease* is not sufficient. The rule of *perfect isolation* should be applied in all forms of *contagious disease.*

4. As two of the greatest factors in producing disease in this State are *defective drainage* and *impure water*, it should be provided by law that, under direction of the State Board of Health, proper provision should be made for drainage of the lands within the State, so that farms and house sites should be placed in a proper and hygienic condition; the first gravel-bed and first stream of water being but a sewer, and surface drainage being conducted into such, provision should be made by order of the State Board of Health for the abandonment of *shallow wells* as sources of supply of *potable water* for the citizens of the State, and that all water obtained from the earth *above* the first "*hard pan*," that upholds the first stream or vein of water, should be prohibited from being used for drinking or culinary purposes. With *perfect drainage*, *abandonment of water* from the *first stream* or vein, and the use of filtered rain-water or water from *the third* stream or vein, the amount of sickness in Indiana would diminish in a surprising ratio, and, with *perfect isolation of all exposed* to the *contagion*, the *spread of all contagious diseases would cease.*

These results will not take place except under compulsory rules, firmly enforced.

IX.

WORK OF THE STATE BOARD OF HEALTH OF NEW YORK.

By Hon. ERASTUS BROOKS,
West New Brighton, N. Y.

THE NEW YORK STATE BOARD OF HEALTH was organized in June, 1880, and was charged not only with the administration of the law then passed, but with all the State laws then in existence relating to the sanitary laws of the State. Its members were limited to three State officers, appointed by the Governor and Senate, three appointed by the Governor alone, and three *ex-officio* officers. The Board at once organized seven standing committees, issued a manual of State laws, and as soon as possible addressed itself to the local governments in the twenty-four cities, three hundred and twenty-six villages, nine hundred and forty-seven townships, — sixty Boards of county officers within the State.

To this large work was soon added the more laborious service of addressing the eleven thousand four hundred and forty school-districts in the State, making, all in all, a communication with twelve thousand seven hundred and ninety-seven organizations. Constant knowledge of, and communication with, all these official bodies, has become a public necessity, and additional correspondence with medical and official persons increases the total to fourteen thousand three hundred official persons or bodies. All of this number perform duties relating to the health of the people and the sanitary condition of places. The more important duties of the Board may be classed under the following heads: —

1. Organizing and instructing local Boards of Health.
2. Sanitary instruction to the people.
3. Investigations of complaints and petitions.
4. Expert work of selected investigation and reports of Board and Experts.
5. Enforcing and testing laws and practices relating to the public health.
6. Sanitary condition of public institutions and schools.
7. Causes and remedies in cases of small-pox, diphtheria, etc.
8. External and internal conditions of the public health, with the duties of local Boards of Health in legislation, vaccination, and in vital statistics.
9. Investigation of endemic, epidemic, and all contagious diseases.
10. Drainage, sewerage, and domestic hygiene.

All these subjects are constantly before the State Board of Health, and involve a vast amount of labor on the part of the Secretary and his assistants. The work of investigation in different parts of the State has been very thorough, and the results most beneficial in the removal of positive and very serious evils.

These results have entered into public and private dwellings, into railroad management and obstructions, into drainage, sewerage, and ventilation, especially in cities, and into the wilderness, when necessary, as well as to towns and villages, and all accessible places.

In a long-confirmed and very disagreeable work of investigation the State Board has also exposed the stench nuisances in many parts of the Commonwealth, and required their removal, especially in the manufacture of petroleum and superphosphate fertilizers. In these and kindred industries over forty millions of capital are employed. All these industries, and the people complaining of them, have had a patient hearing, and the causes of offence have been largely removed. At least nine-tenths of the stench nuisances in and near the cities of New York and Brooklyn have been abated or forced out of existence. Constant vigilance, however, is necessary to keep the offence under control.

Apart from this kind of work more than twenty miasmatic and malarial swamps and ponds have been examined by experts, under directions of the Board, or on the call of the Governor of the State for information. Portions of the abandoned canal have received the same care and with the best results. Beyond this kind of work the Board, upon the earnest call of the people, have visited different parts of the State where their presence and advice were asked for and needed.

The Board has also issued some sixty different circulars, papers, and documents relating to the public health. These papers placed together include three hundred and sixty pages of closely printed useful matter, and the second annual report covers pages of valuable information.

The work of the Board has been in constant advance of the requisition of the State statutes defining their duties. In discussions, writings, and appeals its action covers all material questions relating to miasma, contagion, exposure, drainage, sewerage, and the sanitary condition of all classes and conditions of people, and especially in what belongs to schoolhouses and children in schools.

As a satisfactory record of progressive work the Board has encouraged or established about one thousand town or local Boards of Health, for the people at large, and the whole area of the State has been studied, especially in localities where disease has prevailed or threatened. All that belongs to practical chemistry affecting the health, whether in the laboratory or beyond it, have been called into service under the one or the other of the two recent State laws relating to questions of health and food.

For this special work the State has been divided into three districts, with three chemical laboratories and four analysts, and one inspector for the analysis of water, food, and drugs, and the safety-testing of oils, etc.

Such a work in which more than five millions of the people of one

State alone, with all the success and labor of the past, are interested, may be said to have no limit, or, at least, the New York Board believe that it requires constant care and vigilance. In this respect one year will but foreshadow another, until wise laws, and true labor, and wise instruction, have reached, as nearly as is possible in this work, the honest attempt at least to make the present an improvement upon the past, and the future an improvement upon the present.

X.

A REVIEW OF THE OPERATIONS OF THE NATIONAL BOARD OF HEALTH.

By J. L. CABELL, *President.*

The National Board of Health having been placed by the recent action of Congress in the anomalous and embarrassing position of a body charged with important and responsible duties, and yet deprived of the means of efficiently executing them, some of its members who had been appointed from civil life felt that it was incumbent upon them to consider what course of action on their part would best subserve the interests of the public health, placed in jeopardy, as they conceive, by recent legislation. In consideration of the fact that the Board of Health owes its existence to the efforts of this Association, and of the further fact that their own appointments were largely due to the recommendations of a committee of this body, they have decided to refer the question to the Association itself, and to this end have directed me to address a communication to you, as its presiding officer, setting forth a summary statement of the operations of this Board since its organization in 1879, which they desire to be placed on permanent record.

The occasion is specially adapted to a review of the work of the National Board by this Association, in view of the fact that the law under which the Board had accomplished its greatest and most beneficent work — that of preventing the introduction and spread of infectious diseases — will lapse by limitation unless renewed at the next session of Congress. It is for the American Public Health Association to determine how far the National Board of Health has fulfilled its mission, and whether it is to be destroyed or supplanted by adverse legislation.

In order to the formation of a correct judgment the following statement is respectfully submitted: —

Just at the close of the last session of the Forty-fifth Congress an act entitled "An act to prevent the introduction of contagious or infectious diseases into the United States, and to create a National Board of Health," was passed by both houses of Congress, and was approved by the President, March 3, 1879.

The provisions of this act fell short of the promise implied by its title. It contained no provision whatever for preventing the introduction of contagious or infectious diseases into the United States, and was manifestly the forerunner of a supplemental bill to be introduced at a subsequent session.

As is now well known the National Board of Health, created by the constituting act in question, was to consist of seven members, appointed by the President, one medical officer of the army, one of the navy, one of the Marine Hospital Service, and one officer from the Department of Justice.

It contained an appropriation of fifty thousand dollars ($50,000), to pay the salaries and expenses of the members and for the general purposes of the Board, whose duty was declared to be to obtain information upon all matters affecting the public health, to advise the several Departments of the Government, the Executives of the several States, and the Commissioners of the District of Columbia, on all questions submitted to them, or whenever in the opinion of the Board such advice may tend to the preservation and improvement of the public health; and also, with the assistance of the National Academy of Sciences, to report to Congress at its next session a full statement of its transactions, together with a plan for a national health organization, after consultation with the leading sanitary organizations and sanitarians of the country.

Under this act the existing National Board of Health was organized on the 2d April, 1879, and proceeded to discharge the obligations imposed by the law. A circular letter was addressed to the leading sanitary organizations and to the sanitarians of the several States, requesting an expression of their views with respect to the constitution and duties of a permanent central health organization. The numerous answers received were submitted to the Executive Committee of the American Public Health Association at the annual meeting held in Nashville, November 21, 1879. After a due consideration of these papers the committee in question presented a report and resolutions, which were adopted without a dissenting voice. One of these resolutions was to the effect that "it is not expedient to make any essential change in the organization of the Board, and that any minor improvement in details should be left to the Board itself."

The Association also recommended that Congress should appropriate sufficient funds to enable the Board to employ the best talent and apparatus for continuing the scientific investigations which had been commenced by the Board, and that similar investigations should be undertaken by it in the consideration and prevention of other diseases as well as of yellow fever.

It was further resolved, "That the operation of the existing quarantine law, and of the rules and regulations prepared by the National Board of Health on that subject, have accomplished great good, and that no change in the law should be made without the most careful and serious consideration; and that, in the opinion of the Association, the execution of the quarantine laws of the United States should be under the direction of the National Board of Health and of an executive committee to be selected by that body."

The reference in this latter resolution is to a supplemental act passed in the extra session on the demand of the Representatives from the South-

west, who, taught by the bitter experiences of the great epidemic of 1878, insisted upon the necessity for some kind of a national quarantine. Still, however, a majority in Congress persistently refused to pass any act by which an agent of the General Government would be authorized to exercise any of the police powers heretofore reserved by the States, even though such exercise should be restricted to parts of the sea lying outside of their jurisdiction. Accordingly, the act in question, approved June 2, 1879, did not confer any independent authority upon the National Board of Health in respect of maritime police, and simply prescribed as its duty, "to coöperate with and so far as it lawfully may to aid State and municipal Boards of Health in the execution and enforcement of the rules and regulations made by such Boards to prevent the introduction of contagious and infectious diseases into the United States from foreign countries and from one State into another."

One of the first steps taken by the Board after the passage of this act was to appoint a certain number of inspectors to visit the various quarantine stations, and report, with the least possible delay, their actual condition and necessities. The number of inspectors thus employed was eight (8), and inspections were made by them of quarantine systems and stations as follows: —

Dr. Elisha Harris, from Portland, Me., to New York city.

Dr. E. M. Wight, from New York city to Baltimore, Md.

Dr. A. N. Bell, from Norfolk, Va., to Brunswick, Ga.

Dr. W. H. Elliott, from Brunswick, Ga., to Key West, Fla.

Dr. Jerome Cochran, from Key West to Pensacola.

Dr. J. D. Palmer, from Pensacola to the mouths of the Mississippi river.

Dr. Wirt Johnson, from the mouths of the Mississippi river to Galveston, Tex.

Dr. J. H. Pope, from Galveston to the mouth of the Rio Grande.

Through the reports of these inspectors a large amount of valuable information with regard to the actual condition and operations of the several marine quarantine stations of the Atlantic and Gulf coasts of the United States was collected, and these reports, accompanied with valuable maps and charts, have been published by the Board in its first annual report for the year 1879.

Shortly after the act in question had been approved, and before the Board had an opportunity of selecting and putting into effective operation the appropriate instrumentalities for the execution of systematic plans of prevention, an alarming outbreak of yellow fever in Memphis, and a threatened epidemic in New Orleans, together with its appearance in some other localities, so fully occupied the attention of the Board as to compel it to postpone for a time all consideration of a general plan of operations for future seasons. It is a matter of historical record that the most beneficial results were realized by the measures adopted by the Board, with a view to the suppression of these outbreaks. In this connection we cite a passage from a report made to the Senate of the United

States at the late session of Congress from the select committee to investigate and report the best means of preventing the introduction and spread of epidemic diseases. In this report the following statements are made, with the unanimous approval of the committee: —

"The epidemic of 1879 at Memphis and New Orleans made its appearance before the National Board had been able to perfect its plans of prevention; though it is, in the opinion of the committee, doubtful whether that epidemic could have been prevented, as it is not certain whether it originated from germs of the epidemic of 1878 which had survived, or in fresh importation of the disease. But, under the rules and regulations adopted by the Board to deal with it, it was actually stamped out in New Orleans and confined to the limits of Memphis; and, instead of the general demoralization and panic, with suspension of business, trade, and commerce, which pervaded the country in 1878, commerce and communication with the infected cities were REGULATED, NOT STOPPED, or even retarded to any considerable extent, and the general business of the country went on in its usual methods, and through its usual channels, without serious interruption. Instead of panic and alarm, confidence and a sense of security pervaded the country. The great transportation companies of the South, both river and rail, are unanimous in their approval of the action and methods of the National Board in dealing with such cases, because experience has shown that they give the necessary security against the spread of disease, without stopping or retarding to any considerable extent commercial intercourse. They have learned from their own experience that the certificate of the National Board of Health as to the sanitary condition of any city or place is accepted by other cities and States as testimony coming from a strictly impartial and well-informed authority, independent of all local interests and influences, commercial or otherwise. In the opinion of the committee it has accomplished much, and is capable of accomplishing highly important results of great benefit to the country, — results which can be accomplished by no other agency."

The report from which these citations are made was unanimously adopted by the Senate committee, with the recommendation for the passage of the bill to amend and perpetuate the act of June 2, 1879. This latter act, as an avowed experiment, had been so framed as to be in force for four years on trial.

We add that, so far as is known to us, the methods ultimately selected by the Board for aiding State and municipal boards of health in conformity with the provisions of the act in question have met with the cordial approval of the health authorities of the entire country, save only the Board of Health of Louisiana.

The plan of operations consisted in the establishment and maintenance of three or four refuge stations for infected vessels, so located as to be of easy access from the various ports on the Atlantic and Gulf coasts. It was within the compass of the resources then in possession of the Board to establish and fully equip at least two of these stations, and an appeal

was made to Congress for such additional appropriations as would suffice to establish two others.

It is pertinent in this connection to state that the National Board of Health has uniformly disclaimed any authority to compel even infected vessels to report to these stations, and that it has never asked for any police power in this or in any other direction. The only guarantee for the faithful observance by masters of infected vessels of the regulations which it is desired to enforce at these stations is the police power of the authorities of the port of destination, — a power which asserts itself by adequate penalties in case of disobedience.

Although this explanation has been publicly made over and over again, it has been recently urged in opposition to the policy of the Board in establishing the Ship Island quarantine station, that "from its location, and from the wide passes on either side, it is incapable of effectually protecting the shipping and settlements on the Mississippi Sound, and is wholly incompetent to guard New Orleans either by the way of Atchafalaya, mouths of the Mississippi, or the lakes through the Rigolets."

The English government, from whose regulations this feature was borrowed, has provided two such refuge stations for *foul vessels* coming from infected ports and bound for any port in the United Kingdom. It has never been urged as an objection to their establishment that they fail to guard the approaches to London and Liverpool by the mouth of the Thames and that of the Mersey. In the case of an attempt of such a vessel to enter one of these ports it is required of the customs officer to remand the vessel to the proper refuge quarantine station under penalties for disobedience. (*See "Laws relating to Quarantine," &c., by Sir Sherston Baker*, p. 66.)

Having regard to the proper office of these relief stations for infected ships, it will be seen that a single one adequately equipped would meet the requirements of an extended portion of the maritime coast, including numerous ports of entry.

In such a case these latter ports would need only the service of an inspecting officer to board vessels and to remand to the nearest refuge-station infected vessels which had attempted to enter his port in violation of the general orders prescribed for such vessels.

The authorities of Pensacola, Mobile, Galveston, and of the ports on the Mississippi Sound, have gladly availed themselves of the protection afforded by the Ship Island station, and in like manner the Sapelo Sound station on the coast of Georgia, notwithstanding its very imperfect equipment, is recognized by the health authorities of Charleston, S.C., Savannah and Brunswick, Georgia, and of other ports further south, as a most effective and precious means of protecting those ports against the introduction of infectious diseases by vessels arriving from foreign centres of infection. The health authorities of New Orleans only have persistently rejected the aid thus offered to them, and profess to consider the offer as both an injury and an insult.

The successive annual reports of the Board contained conclusive evi-

dence of the value of these stations, and of the comparatively trifling cost of their construction and maintenance. It was shown that no other method of preventing the introduction of contagious diseases into the United States from foreign countries could be at the same time so effective and so inexpensive.

The act of June 2, 1879, provides that all vessels sailing from any foreign port in which any contagious or infectious diseases exist shall be required to obtain from the consular officer of the United States at the port of departure a bill of health setting forth the sanitary history of the vessel, and that it has in all respects complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the vessel, its cargo, passengers, and crew. It also requires that the National Board of Health shall make such rules and regulations as are authorized by the laws of the United States and necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign ports or places at which contagious or infectious diseases exist to any port or place in the United States, to secure such condition; and when such rules and regulations have been approved by the President they shall be published and communicated to and enforced by the consular officers of the United States.

Compliance with these rules on the part of owners or masters of vessels was to be enforced by heavy penalties imposed upon all vessels entering or attempting to enter a port of the United States in violation of the provisions of the act, and of all rules and regulations of State and municipal authorities made in pursuance of the act; but none of the penalties imposed were to attach to any vessel until the act, and the rules and regulations made in pursuance thereof, shall have been officially promulgated for at least ten days in the port from which the vessel sailed. This proviso had the effect of rendering the law for the most part inoperative, for the official promulgation could not be made without the consent of the authorities of the port, and in Cuba this consent was refused.

Moreover, the terms of the law, as just cited, were such as to throw upon the Government of the United States the burden of proof as to the existence of contagious and infectious disease at the port of departure, and it was only in this latter contingency that the provisions of the law as to obtaining a bill of health would apply. To meet these two difficulties, which had so effectually prevented the execution of very important requirements of the law, the Board recommended amendments by which vessels coming to the United States from all foreign ports, without regard to the alleged existence of infectious disease in such ports, should be required to have bills of health, after a form prescribed by the National Board, and by which the penalties for violation of the law might be applied without the necessity of the official promulgation of the same.

A bill embodying these and some other proposed amendments was introduced in the Senate in the winter of 1879–'80 by Senator Harris, of Tennessee, but owing to the opposition manifested by many of the friends of the National Board to one of the provisions of the bill, the object of

which was strangely misunderstood, the Senator was induced to withhold any further effort to procure its passage.

The only object of the objectionable provision was to induce local authorities to abstain from imposing unnecessary restrictions upon trade and travel by fixing upon the National Board and the President of the United States the responsibility of declaring when quarantine ought to be declared. It was designed to have the effect of preventing premature and unnecessary quarantines under the orders of local boards, not by any assumption of power to override State authority, but solely by means of the confidence which is reposed in the certificates of the Board as coming from a competent and disinterested witness.

INTERNATIONAL SANITARY CONFERENCE.

The next step undertaken by the Board, with a view to increase the opportunities for the application of measures looking to the prevention of the introduction of infectious diseases from foreign ports, had reference to a scheme of international notification as to the sanitary condition of ports and of vessels sailing therefrom.

It will be borne in mind that the Association adopted at the Richmond meeting, in October, 1878, a resolution to the effect that it is the duty of the General Government to invite foreign nations to coöperate with it in the establishment of uniform and effective international quarantine regulations, and that at the next annual meeting, held in Nashville in November, 1879, the National Board of Health having been created in the interval, it was "resolved that it is expedient for the National Board of Health to call an international congress for the discussion of the very important subjects of international sanitary quarantine," etc.

The Board did not overlook this subject nor disregard the wishes of the Association, but after several conferences with Mr. Evarts, then Secretary of State, and other prominent officials in both the Legislative and Executive branches of the Government, it was clearly ascertained that the United States could not, under judicial decisions heretofore considered as conclusive, become a party to any treaty binding the Government to enforce international quarantine regulations. For, although the Federal authority may, under the commerce-regulating clause of the Constitution, interpose to prevent infected or suspected vessels from entering any port of the United States, except in accordance with such regulations as it may prescribe, it has never claimed the right of granting free *pratique* to vessels in opposition to the wishes of the local authorities. There is a difference of opinion among jurists as to the exis ence of such a right on the part of the General Government, and all are agreed that it would be an unwise policy to exercise such a right if it were admitted to exist. As has been elsewhere said by one of us, the National Board of Health, "necessarily restrained by this consideration from taking any further steps in the precise direction specified in the resolution just cited, finally decided to ask for a conference which should only be invited to consider the

means of establishing an international system of notification as to the sanitary condition of ports and places, and of vessels sailing therefrom. In accordance with this recommendation the two houses of Congress, by a joint resolution, directed the President of the United States to call such a conference to meet in Washington, to which the several powers having jurisdiction of ports likely to be infected with yellow fever or cholera should be invited to send delegates. Twenty-three States, in addition to Canada and the United States, responded to this invitation, and the conference was opened on the 5th of January, 1881. The final act was signed March 1, when the conference was closed.

"The delegates of the United States, though outvoted on some points of detail, were successful in obtaining a general recognition of the principle for which they contended, that the accredited agents of each government should have facilities for verifying the statements which would be contained in the bill of health delivered by the local authorities of foreign ports, and *viséd* by its own agents. They were successful, too, in obtaining the adoption by the conference of a form of bill of health submitted by themselves, which form requires the authority which delivers it to furnish the most precise and detailed information as to the sanitary condition of the port and the surrounding country, and of the vessel, its cargo, passengers, and crew,—all this, too, not in general terms, but under specified heads, so numerous and so particular as to make it almost impossible to mislead the authorities of the port of arrival, except by wilful misrepresentation and fraud on the part of those who furnish the bill."

It cannot be necessary to insist upon the self-evident proposition that an immense sanitary advantage to the country of destination is gained by transferring the work of the inspection and disinfection of vessels from the port of arrival to the port of departure. Badly infected vessels would be detained by the voluntary action of the owners or masters, rather than encounter the expensive measures of quarantine, which would necessarily be applied at the port of arrival, in view of the damaging representations of a foul bill of health. The adoption of such a system of sanitary surveillance would lead to as favorable results elsewhere as have attended its operation in the ports of the Red Sea, in accordance with the recommendations of the International Sanitary Conference of Constantinople, of 1865. In 1865 Asiatic cholera was introduced into Europe, by way of the Red Sea, for the first time. The effects of the wide-spread epidemic resulting therefrom were such as to induce the several governments to call a diplomatic and medical conference at Constantinople in the following year. It was decided at this conference to establish, under international auspices, posts of observation on the shores of the Red Sea, to be occupied by competent sanitary physicians selected for the purpose. By this and other kindred measures the further introduction of cholera into Europe by the Red Sea has been effectually prevented. For, although the disease appeared simultaneously in Turkey and in the Hedjaz, in 1871, it reached Europe, through Turkey only, and

its subsequent appearance in Alexandria was traced to an importation *from* Europe, and not from the Arabian ports of the Red Sea.

The Government of the United States, after inviting the sanitary conference at Washington, and after securing through the agency of its delegates in that conference the most important concessions of international comity, the ratification of which would have placed it in the power of its consular agents in foreign ports to secure the best sanitary condition of vessels sailing to the United States, and thus have gone far to prevent the introduction of infectious diseases, has not yet taken the first step towards obtaining such ratification. Nearly twenty months have passed since the final adjournment of the conference, and its proceedings have not yet been printed.

It has already been stated that the Cuban authorities refused to permit the official promulgation of the act of June 2, 1879, and that, as a consequence, it had become impossible to enforce the penalties prescribed for violations of the law. Nevertheless the owners and masters of most of the vessels sailing from Havana to ports of the United States found it to be to their advantage to carry clean bills of health delivered by the consul of the United States, and readily consented to such inspection and such measures of disinfection as would justify that officer in certifying to a satisfactory sanitary condition. To enable the consul to perform this work through the agency of a competent medical officer the National Board of Health employed Dr. D. M. Burgess, a citizen of the United States, who had resided in Havana for seven or eight years, and who commanded the respect and confidence of all who knew him, both in his native country and the home of his adoption. The great value of his services in this connection has been acknowledged by the health officers of the Atlantic ports generally, and especially in terms of warm commendation by the health officer of the port of New York. The recent action of Congress has deprived the Board of the power of retaining this agent, whose services are regarded by the consul-general at Havana as so very important that he has made a special representation to the State Department on the subject.

MISSISSIPPI–RIVER INSPECTION.

Next in importance to maritime quarantine is the service which has for its object the sanitary surveillance of the Mississippi river, with a view to prevent in future the dissemination of infectious diseases by river craft, as was done with such disastrous consequences in the fatal summer of 1878. This service, known as the Mississippi-river Inspection Service, included two somewhat distinct branches. One of these, under the special supervision of Dr. S. E. Chaillé, of New Orleans, included the following-named agents in addition to the supervising inspector himself, who had general charge of this entire branch: —

(1.) An inspector stationed at the State quarantine below New Orleans, by consent of the governor of Louisiana, who was to have the privilege of inspecting, in company with the quarantine officer of the State, all vessels

subject to quarantine examination, and was required to make daily reports to his superior in New Orleans, and, through him, weekly reports to the National Board of Health.

(2.) Two inspectors, who were required, on the request of masters or owners of steamboats and other river craft, to inspect such boats and furnish certificates to such as were ascertained to be free from infection.

(3.) Two or more inspectors, to be paid by railroad companies, who were required, under like conditions, to inspect freight cars and their contents.

The other branch of the river inspection service was under the charge, during the year 1880, of Dr. R. W. Mitchell, of Memphis, a member of the National Board, aided by Dr. F. W. Reilly, who succeeded him for the year 1881, and was himself succeeded by Dr. Fayette Dunlap for the current year. This service, with its head-quarters at Memphis, included an inspection station at President's Island, eight miles below Memphis, and one at Vicksburg.

During the summer of 1879, when Memphis was badly infected and shut out from intercourse with its neighbors, the upper inspecting station was established at Cairo.

The fruits of this service in maintaining cleanliness of steamboats and other river craft, and in giving confidence to the people of the valley, — even when yellow fever was epidemic in Memphis and a serious outbreak had occurred in New Orleans, — were in the highest degree satisfactory.

To illustrate, take the tonnage of a single railroad. The Illinois Central, at the one point of Cairo, sent to and received from the South in 1879, 100,470,000 tons of freight more than it received and sent in 1878, in addition to which the passenger trade was scarcely interrupted in 1879, while it was almost entirely suspended in 1878. Thus, Dr. Rauch, Secretary of the State Board of Health of Illinois, made the following statement, as cited in one of the quarterly reports of the National Board: —

"EFFECTS OF QUARANTINE ON INTER-STATE TRAFFIC.

"Enclosed herewith please find an official report of the tonnage of the Illinois Central Railroad at Cairo for the last six months of the years 1878 and 1879.

Tonnage forwarded from and received at Cairo.

Months.	Forwarded.	Forwarded.	Received.	Received.
	1878.	1879.	1878.	1879.
July	10,071,800	20,914,900	28,550,200	48,574,600
August	10,510,400	19,050,200	31,124,000	52,575,200
September	10,282,200	17,218,200	23,864,100	60,671,600
October	10,491,600	22,523,600	48,459,500	71,044,000
November	10,004,500	27,050,100	61,854,600	60,066,700
December	26,940,100	23,076,800	70,558,800	74,137,700
	87,300,600	129,833,800	267,411,200	367,069,800

"In this statement will be found an illustration of the effect upon commerce by the different systems in vogue in the management of yellow fever in the respective years. While it is true that the general increase of trade had its influence, it is fair to assume that this is not sufficient to account for the difference that obtains in the statement. In 1878 there was practically a quarantine excluding everything that came from the South; while in 1879 it was one of inspection, excluding only dangerous articles. This result could not have been brought about without the coöperation of the National Board of Health, as our Board without this coöperation could not have permitted the immense amount of material to be brought into the State from the South during the months of July, August, September, and October. It required my constant presence at Cairo (especially in July), and my repeated assurances to the local authorities that every precaution was being exercised at New Orleans and along the entire route to prevent the introduction and spread of the fever northward, to allay their fears, as this year a large number of the citizens of Cairo were favorable to a quarantine of exclusion. Such was the feeling of apprehension that fully one-third of the population of Cairo, from July 15 to September 1, were ready to leave the moment the first case appeared, no matter whether it was of foreign or local origin.

"The Illinois Central Railroad pays to the State of Illinois seven per cent. of its net earnings, and it is not presumption to say that the increase of revenue, as the result of the course pursued during the months of July, August, September, and October, 1879, amounted to more than three times the amount appropriated by the State for sanitary purposes. It must also be borne in mind that this does not include a statement of the difference in the receipts from passengers or the trade of the Cairo and Vincennes and Cairo and St. Louis railroads and of the river traffic.

"To the same cause can be attributed the fact that we did not have a single case of yellow fever in our State in 1879.

"In view of such beneficent results in the protection of the public health, and the removal of disastrous obstructions to inter-State commerce, the Board is strongly impressed with the force of the considerations presented by Dr. Mitchell in favor of the policy of extending the service in question so as to include that portion of the Mississippi which is between its mouth and the city of New Orleans. If their expectations with regard to the probable prospective coöperation of the State Board of Health of Louisiana in connection with this service should be fully realized, the estimated cost of the additional equipment for the service will be insignificant in comparison with the positive and material benefits to be gained."

The following correspondence is also submitted: —

"National Board of Health,
Inspection Service, Office of the Director,
Memphis, Tenn., October 28, 1880.

"Dear Sir,—Will you be good enough to favor me with your views as to the utility of the inspection service of the National Board of Health, stating whether, in your opinion, it has proved to be of sufficient value to commercial and railroad interests to warrant the Board in continuing it during another season?

"I shall be largely guided by the judgment of yourself, and other representative men in the valley, in the recommendations which it is my duty to make to the Board in connection with the report of the operations of this service, which I am now about to submit.

Very respectfully,
R. W. MITCHELL,
Member National Board of Health,
and Director Inspection Service.

"Maj. M. Burke,
Supt. Miss. & Tenn. R.R., Memphis, Tenn."

"Mississippi and Tennessee Railroad,
Office of the Superintendent,
Memphis, Tenn., November 3, 1880.

"R. W. Mitchell,
Director of Inspection Service,
National Board of Health, Memphis, Tenn.:—

"Your letter of the 28th ult., asking whether, in my judgment, the inspection service of the National Board of Health has been of sufficient value to commercial and railroad interests to warrant its further continuance, was received while I was engaged in completing my annual report to the stockholders of the Mississippi and Tennessee Railroad. I have deferred answer until I could furnish some figures to sustain my opinion.

"I knew, in a general way, as I suppose all railroad men south of Saint Louis and west of Chattanooga know, that the confidence felt through the Mississippi valley in the supervision and certificate system of the National Board of Health has been of signal benefit in preventing panic and local quarantine on several occasions during the past summer, particularly in July last, when the Excelsior cases occurred in New Orleans, just about the time of the anniversary of the Memphis outbreak of yellow fever in 1879, and when every one in the Mississippi valley was more or less apprehensive, and it would have been very easy to create a costly panic. At that time Grenada, the southern terminus of our road, and which suffered so severely in 1878, prepared at once to enforce a local quarantine, and would undoubtedly have done so but for the measures instituted by the National Board of Health. Quarantines are catching, and, if Grenada had started one, the probability is that other places would have followed

suit. The railroads know, to their cost, what such quarantines mean, and I believe it was the settled determination of some of the most important roads, in the event of their establishment as in 1879–'80, to run their engines into the yard and not turn a wheel until the people had come to their senses.

"Fortunately no such emergency has arisen during the past year, and the following table and figures will show the difference in the results to this road: —

"*Comparative statement of the business of the Mississippi and Tennessee Railroad for the years ending September* 30, 1879 *and* 1880, *respectively.*

Cotton transportation.	1880.	1879.	Increase.
	Bales.	Bales.	
Shipments from local stations to Memphis	52,919	49,170	3,749
Shipments from local stations to New Orleans . . .	23,292	13,209	10,083
Total local cotton	76,211	62,379	13,832
Received at Memphis from line of C., St. L. & N. O. R.R.	1,306	750	556
Forwarded from Memphis to New Orleans	95,344	38,879	56,465
Total number bales transported	172,861	102,008	70,853

"It would be misleading to attribute all of this increase to any one cause, and it would be manifestly improper to compare 1879 with 1880 in order to determine the value of the inspection service, since in the former year Memphis was still closed by quarantine during the early part of the cotton-shipping season, and the injury to our business was due to this cause and to the yellow fever in the city. Excluding Memphis on this account, and comparing only the local stations which were not affected by these conditions, it will be seen that the increase of 1880 over 1879 is +76 per cent., and a very large share of this increase is undoubtedly due to the general sense of confidence which people had come to feel in the inspection service in 1880, and which thus preserved intercourse and traffic from interruption in that year. The service was too incomplete and too novel in 1879 to inspire this confidence, and as a consequence every town and village and railroad-crossing ran an independent quarantine of its own, in the face of which it was almost impossible to run a railroad train.

"This opinion is still further strengthened by comparisons of the passenger earnings and the freight earnings for the two years. Still excluding Memphis, for the reasons above given, the increase of our passenger earnings in 1880 over 1879 will be seen to amount to +68 per cent. [See Table No. 3, Annual Report.] The freight earnings for local stations outside of Memphis nearly doubled in 1880 those of 1879, the increase being 97.7 per cent. [See Table No. 6, Annual Report.]

"I do not know that anything which I could say would add to the value

of the testimony of these figures. But I have no hesitation in asserting that I believe it to be the duty of the National Board of Health to continue its inspection service, not only next season, but every season, until the valley is no longer liable to be visited by yellow fever. This assertion, I think, expresses the opinion of every railroad manager with whom I am acquainted.

Very respectfully,

M. BURKE, *Gen'l Sup't.*"

Letters of similar tenor were received by Dr. Mitchell from the Memphis Cotton Exchange, and kindred bodies in Little Rock, Arkansas, Shreveport, La., Vicksburg, Miss., and elsewhere; from the agents of the Chicago, St. Louis, & New Orleans Railroad, of the Louisville and Nashville Railroad, of the Nashville, Chattanooga, & St. Louis Railroad, of the Memphis and Charleston R.R., from the superintendent of the St. Louis & Vicksburg Anchor Line of Packets, and from numerous other representatives of railway and packet companies, as cited in Dr. Mitchell's report, published in Supplement No. XII. of the National Board of Health Bulletin, Feb. 5, 1881: —

INTRODUCTION OF SMALL-POX INTO THE UNITED STATES.

Immigrant Inspection Service.

At an early period of the summer of 1881 the health authorities of New York, Michigan, Indiana, Illinois, Iowa, Minnesota, and Wisconsin, being impressed with the evidences of the alarming prevalence of small-pox in the Western and North-western States, met in conference at Chicago, on the 29th and 30th June, to consider what measures should be taken to prevent further importations of the disease, and to stamp out the existing local epidemics. It was conclusively shown that the disease was for the most part introduced by emigrants from Europe taking passage at ports where it was known to exist, and where, consequently, persons coming from the interior were exposed to the contagion in cheap lodging-houses immediately before sailing. Owing to the length of the period of incubation the disease is seldom manifested until after the emigrants have passed quarantine inspection at the ports of arrival and have proceeded thence to their several destinations in the Western States, where they initiate local epidemics in numerous localities.

The conference passed resolutions calling upon the National Board of Health to aid the State health authorities, in conformity with the provisions of the act of June 2, 1879, to prevent the introduction of contagious and infectious diseases into the United States from foreign countries, and from one State to another. The executive committee accordingly felt constrained to call a special meeting of the full Board, in order to revise the rules and regulations heretofore approved by the President of the United States for securing the best sanitary condition of vessels, including their cargoes, passengers, and crews, coming to the

United States from any foreign port where any contagious or infectious disease exists, and to make such modifications as would serve to render these regulations available for the prevention of the introduction of small-pox into the country. They had been originally prepared with reference to other infectious diseases. It was also desired to consider the propriety of reporting to the President the fact that there is no adequate provision, by State or municipal legislation, in any of the ports of the United States, for the effective application of preventive measures against the introduction of small-pox, and of soliciting his intervention in the manner prescribed in Section 3 of the same act.

At this special meeting, held July 28, the Board found the evidence of the frequent importation of the contagion by emigrants from Europe to be fully conclusive, and that the consequences were such as to justify the demand by the health authorities of the States referred to, and to call for prompt and energetic action. Accordingly the Board adopted a revised system of rules and regulations to be observed at foreign ports for securing the best sanitary condition of vessels, including their cargoes, passengers, and crews, coming to the United States from such ports, the principal feature of which was the incorporation of a new rule, requiring the vaccination of all unvaccinated emigrants about to embark for the United States from any foreign port or place in which small-pox exists.

At the same time, in a separate communication, the President was respectfully requested to approve a draft of "Additional rules and regulations to supplement the defective rules of local Boards of Health, in respect to the measures to be adopted at the home ports for preventing the introduction of small-pox into the United States."

These additional rules and regulations require the vaccination of unprotected emigrants arriving at any of the ports of the United States from places where small-pox exists, or, in the contingency of their refusal to be vaccinated, then their detention in quarantine until sufficient lapse of time after their exposure to insure their freedom from contagion.

These papers were prepared in July; but their submission to President Garfield was necessarily prevented by his assassination about that time. On the 29th September they were submitted to President Arthur, and were approved by him November 14. The several papers alluded to in this statement were published in the *Bulletin*, Vol. 3, No. 21, Nov. 19, 1881.

The modified "rules and regulations for securing the best sanitary condition of vessels, including their cargoes, passengers, and crews, coming to the United States from any foreign port where any contagious or infectious disease exists," thus approved by the President, required that all such vessels should obtain from the consular officer of the United States, at the port of departure, or from the medical officer, where one had been detailed for that purpose, a bill of health in duplicate, setting forth the sanitary history of the vessel and the actual sanitary condition of the vessel and the port from whence she sails or at which she touches, and also that the rules and regulations in question have in all respects

been complied with. The following rule is specially applicable to the case of small-pox inspection: —

"In case the port is *infected*, the certifying authority may require that the officers, crew, and passengers shall be examined by a medical officer or physician selected for that purpose, and the result reported to him not more than twenty-four hours before certifying to the bill of health.

"If small-pox exists at the port, the certifying authority shall require that the medical examination above provided shall extend to all passengers, as well as to the officers and crew, for the purpose of determining their protection against small-pox; and every person found unvaccinated, or not satisfactorily protected, shall be properly vaccinated before the vessel leaves the port, and a record of such vaccinations, including the name of each individual vaccinated, and the date of vaccination, shall be given to the master of the vessel, to be by him delivered to the quarantine authority at the port of arrival."

These rules and regulations were promptly communicated by the State Department to the consular agents of the United States, who were directed to execute and enforce the same. It appears that in many instances the owners and agents of the immigrant lines of steamships had anticipated the promulgation of these rules, and were taking active measures to secure the vaccination of their steerage passengers. Very favorable results of this action were reported to the National Board by the health officer of the port of New York. Nevertheless, as might have been expected, many of the vaccinations proved to be unsatisfactory, either from a careless and perfunctory performance of their duty by the medical officers on board the steamships, or from other more excusable causes. Thus Dr. Rauch, in his report of the operations of the immigrant inspection service in his district for the month of July, 1882, makes such specifications as the following: —

"Steamship *Hermann*. Only thirteen properly protected out of four hundred and ten; the vaccinations performed on shipboard very unsatisfactory. *All passengers provided with protection cards.*"

"*St. Germain*, *Ethiopia*, and *Wieland*. None vaccinated on shipboard; many totally unvaccinated children provided with ship's *protection cards.*"

"*Devonia* and *Warwick*. Over one-half of the passengers by these two steamers were found to require vaccination, although all were provided with ship's surgeons' cards, which they had been told would prevent any other physicians from interfering with them."

There were numerous other cases of similar character to these, and just as bad. To meet the exigency arising from such a condition, which had been fully anticipated, the "additional rules and regulations neces-

sary to prevent the introduction and spread of small-pox," to be observed at the ports of arrival and places along the lines of immigrant transportation, had been prepared by the National Board of Health, and approved by the President simultaneously with his approval of the rules and regulations to be observed at the ports of departure. Inasmuch, however, as the act of June 2, 1879, did not confer any independent authority in matters of quarantine upon the National Board, which was only empowered to coöperate with and aid State and Municipal Boards, it was necessary before these additional rules could be enforced that the local Boards should adopt them as their own rules, and then call upon the National Board to aid in their execution and enforcement. This all were willing to do, each making it a condition that all the others should adopt and execute the same rules. Some delay was experienced in securing the necessary harmony of action; but at length the desired concurrence was obtained, at a conference held at Port Huron, on May 18, and immediately thereafter the immigrant inspection service was inaugurated by the appointment of inspectors, whose sole business is to look after cases of small-pox at several of the prominent seaports and the railway centres of the North.

Those at the seaboard examine every immigrant coming in, and give him a protection card if he be found satisfactorily vaccinated, or, if not being protected before, he consents to be now vaccinated. This certificate is good until the next inspection station is reached, when the immigrant is again examined, to insure against the development of small-pox since leaving the seaboard. One inspector is stationed at the quarantine of New York, who acts in conjunction with the health officer of the port and with the agent of the State Board of Health. Then there are inspectors at Hornellsville and Rochester, N.Y., at Cleveland, O., Pittsburgh, Pa., Grafton, W. Va., Indianapolis, Ind., East St. Louis and Chicago, Ills. There are also inspectors at Baltimore, Philadelphia, and Port Huron, at which ports numerous immigrants arrive. The authorities at Boston have not asked for aid from the National Board, but have adopted and faithfully enforced the additional rules and regulations at their own expense. Dr. Durgin, President of the Boston Board of Health, states "that for some months the cards marked 'Protected' were torn up by the local inspectors as utterly misleading, and the immigrants *examined and vaccinated.* The steamboat companies and their surgeons on board have, however, learned what is meant by protection, and the cards are now worth looking at." At Port Huron there are three inspectors, and at Chicago three.

Since the system was put in force results (such as are specified in the following official circular, addressed to the inspectors in his district by Dr. J. H. Rauch, Secretary of the State Board of Health of Illinois) have been realized along all the lines of immigrant transportation where previously small-pox had so prevailed as to assume the proportions of an epidemic.

"ILLINOIS STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, SPRINGFIELD, July 15, 1882.

"*To the Immigrant Inspectors, District of Illinois:* —

"GENTLEMEN: — For the first time in eighteen months small-pox is practically under control in Illinois. That is to say, there has been but one solitary new importation of the disease into the State since the inspection service was begun, on June 1. There are, however, fully fifteen hundred immigrants arriving and passing through the State every day, and one-third of these are even yet found susceptible to the disease and capable of propagating the contagion. From the experience of the past it is within bounds to say that there would have been at least thirty separate cases of infection developed in this State alone during the past six weeks had it not been for this inspection service.

"The refusal of Congress to appropriate the funds necessary to enable the National Board of Health to continue this work has caused the latter body to order a suspension of the service on and after to-day. Such a suspension means a renewal of the exposure of Chicago, of Illinois, and of the region beyond, to the imported infection, by which they have always been threatened, and frequently invaded, whenever there was much immigration. Hitherto it has been found impossible to prevent the repeated introduction of the disease by this class of persons.

"A feasible and successful method has been demonstrated for the protection of the Mississippi valley against yellow fever and of the West and North-west from small-pox, namely, a system of sanitary inspections carried on, without obstruction of commerce or travel, covering the whole of the exposed territory, without regard to State boundaries, regulated by a national organization independent of other considerations than those of the public health, and maintained, as such a service legitimately should be, by the National Government, — as legitimately, at least, as the light-house, or harbor improvement, or life-saving, or any other service for the general welfare.

"The abolition of the inspection service at the very time when its value has been unquestionably proved, is an inexcusable trifling with the health interests of thirty million of people, aside from any consideration of the effect upon commerce and the great grain and provision markets of the withdrawal of what had already come to be relied upon for truthful and authoritative announcements of the presence or absence of danger."

The order referred to in this circular was a contingent one, and was predicated upon the action of the House Committee of Appropriations, which would have rendered it impossible for the Board to continue these inspections beyond the date specified; but the subsequent extension of the appropriations of the last fiscal year placed it in the power of the Board to continue its operations until an amendment by the Senate, finally concurred in by the House, added $25,000 to the fund allowed for aid to State and local Boards of Health, and made this available as well for pre-

venting the introduction of small-pox as for that of yellow fever and cholera.

SCIENTIFIC INVESTIGATIONS AND SANITARY SURVEYS.

The special duties imposed upon the National Board of Health by the constituting act of March 3, 1879, have an importance quite distinct from that attaching to the work of coöperation with State and Municipal Boards of Health in the matters of quarantine. The following extract from the annual report of the Board for the year 1880 will serve to indicate the estimate placed by the Board itself upon this branch of its duties, and furnish an index of the work performed: —

"The National Board of Health, in making its second annual report, feels that it has a right to congratulate the country upon the general results of its labors since it went into operation in April, 1879. These results, as will be more particularly shown in the sequel, have reference either to the investigation of the causes of disease by means of scientific experiments and by sanitary surveys of places more than usually unhealthy, or likely to become so, or to measures which have for their end the prevention of the introduction of contagious and infectious diseases into the United States from foreign countries, or from one State into another.

"It is hoped that before many years have passed the people will have become so educated to the idea of public sanitation that not only every State and Territory, but every township, will have its own Board of Health, in the assured conviction that it is far better to provide for the prevention than for the cure of diseases; especially for those pestilential diseases of indigenous and local origin, for which, in all probability, a preventive remedy may be found in careful and habitual attention to local sanitation; while other machinery must be invoked to deal with those more pervasive pestilences, which, introduced from abroad as an incident of commerce, may overrun and devastate vast territories, and which, in order to be checked, require the intervention of the strong arm of the General Government in the exercise of its powers to regulate commerce with foreign countries and between the several States. Of these two functions of the National Board of Health, as determined respectively by the constituting act, approved March 3, 1879, and by the act to 'prevent the introduction of contagious and infectious diseases into the United States,' approved June 2, 1879, the former is recommended to the support of the national legislature, for the twofold reason that the resulting benefits will not be the exclusive possession of any one section of the country, but will apply equally to all, and that the cost of conducting such investigations is beyond the means of private individuals or of the separate States.

"In this connection it is pertinent to allude to the great impulse given to the progress of preventive medicine by the special scientific investigations conducted by experts appointed for the purpose by the Local

Government Board of England, and published in connection with the reports of the medical officer of the Privy Council. In regard to the value of these scientific investigations in their relation to the increase of our resources for the prevention and cure of disease, there can be but one opinion among those who are competent to judge. One of the most notable and beneficent improvements in modern surgery, the practice of the antiseptic treatment of wounds, is believed to have reduced the mortality of many of the graver surgical operations by at least fifty per cent.; and this remarkable result, which, with equal truth, may be affirmed with respect to the death-rate of accidental wounds, is justly accredited to the investigations of a few zealous votaries of science on the life-history of certain microscopic organisms, — investigations which, when first undertaken, were seemingly remote from any probability of being immediately applicable to purposes of practical utility. Many others, of equal significance, might readily be cited to illustrate the bearing of scientific researches on the enlargement of our means of preventing and of curing disease. In an earnest appeal to the Privy Council to continue these investigations it was urged by their distinguished medical officer that where research, if it is to succeed, requires systematic and continuous labor, extending over long periods of time, — labor not only inconducive to immediate pecuniary profits, but, perhaps, involving much cost, — it can hardly be expected that the study, however great its eventual importance, will be adequately cultivated by private investigators.

"To set on foot and direct such investigations by competent experts, appointed and paid by the National Board of Health; to obtain information upon all matters affecting the public health; to advise the several Departments of the Government, the Executives of the several States, and the Commissioners of the District of Columbia, on all questions submitted by them, or whenever in the opinion of the Board such advice may tend to the preservation and improvement of the public health, — were the obligations imposed on this Board by the act of March 3, 1879.

"In the discharge of these duties the Board has, since the date of its organization, set on foot the following investigations and inquiries, a few of which are still in progress, the others having been finally completed. Most of them have been noticed in former reports, with appropriate explanations as to their end and methods, which it would be unnecessary to repeat at this time.

"I. The collection of information and advice from the principal sanitary organizations and sanitarians of the United States as to the best plan for a national public health organization, including the subject of quarantine, both maritime and inland, and the relations which should exist between State and local systems of quarantine and a national quarantine system. The information thus collected and the report of the National Academy of Sciences, which had been required to coöperate with the Board in deducing conclusions from such information, were embodied in the first annual report of this Board.

"II. The investigation of yellow fever in the island of Cuba by a com-

mission of experts, consisting of Dr. S. E. Chaillé and Col. T. S. Hardie, C.E., of New Orleans; Dr. G. M. Sternberg, U.S.A.; and Dr. John Guitérás, of Philadelphia. The final report of this commission has been received, and is appended hereto.

"III. The collection of the sanitary laws of the United States and of several States, including both the statutes and the decisions of the several courts on all questions involving the public health. A large part of this work, that, namely, relating to judicial decisions by R. C. Lincoln, Esq., of Boston, has been completed, the remaining part being in progress under the direction of E. B. Smith, Esq., of the law department of the United States Government.

"IV. An investigation as to the best method of determining the amount and character of organic matter in the air has been completed by Prof. Ira Remsen, of the Johns Hopkins University, of Baltimore, whose preliminary report on the same subject has heretofore been transmitted to Congress in connection with the first annual report of this Board.

"V. An investigation as to the composition and merits of the various patent disinfectants, by Prof. C. F. Chandler, of Columbia College, New York, President of the Board of Health of the city of New York, assisted by Elwyn Waller, Ph. D.

"VI. An investigation into the adulterations of food in the United States, by Prof. R. C. Kedzie, M.D., President of the State Board of Health of Michigan, and by Prof. Lewis Diehl, of Louisville, Ky., as to the adulterations of drugs, both of whose reports, together with a later and more detailed report, by Dr. Charles Smart, on adulterations of food, recently completed, are appended hereto.

"VII. A preliminary inquiry as to the communicable diseases of animals, by Prof. James Law, of Cornell University, Ithaca, N.Y.; also a report on the same subject, by Dr. T. S. Verdi, a member of this Board.

"VIII. An investigation of the flow of sewers in relation to their sizes and gradients, by Col. George E. Waring, Jr., of Newport, R.I., whose final report is hereto appended, a preliminary report having been heretofore transmitted to Congress.

"IX. A report by Dr. Elisha Harris, of New York, upon diphtheria, as it occurred in northern Vermont.

"X. An investigation by Prof. Raphael Pumpelly, of the United States Geological Survey, aided by Prof. George A. Smyth, upon the influence of various soils upon sanitation, which is still in progress, and promises to yield results of great scientific interest and practical sanitary value. Very recently the Board has authorized Dr. George M. Sternberg, U.S.A., to assist in this investigation with reference to its biological relations."

The investigations of Profs. Pumpelly and Smyth have been necessarily arrested for want of an appropriation by Congress for such purposes. A preliminary report, dated March 28, gives the record of the details of about four hundred experiments, involving very skilful and delicate ma-

nipulations. Numerous as the experiments have been, they form but the beginning of a series which opens up a new field of research of great practical importance.

The opinion, widely entertained, that there is little or no danger of the pollution of wells by sewage leaching from cesspools in a sandy soil, provided a moderate distance intervenes, is completely refuted by these experiments, which prove that "sand interposes absolutely no barrier between wells and the bacterial infection from cesspools, cemeteries, etc., lying, even at great distances, in the lower wet stratum of sand." Moreover, "it appears probable that a dry gravel, or possibly a dry, very coarse sand, interposes no barrier to the free entrance into houses built upon them of those organisms which swarm in the ground-air around leaching cesspools, leaky drains, etc., or in the filthy made-ground of cities." They also show "that a house may be built on a thoroughly dry body of sand or gravel, and its cellar may be far above the level of the ground-water at all times, and it may yet be in danger of having the air of its rooms contaminated by the germs from leaching cesspools and vaults; for, if the drift of the leaching be toward the cellar, very wet seasons may extend the polluted moisture to the cellar walls, whence, after evaporation, the germs will pass into the atmospheric circulation of the house."

Dr. Frankland, the eminent professor of the National School of Science, South Kensington Museum, London, says of this paper, in a letter to the author: "I consider it to be one of the most important contributions ever made to our knowledge of the propagation of epidemic diseases."

"XI. An investigation by Drs. H. C. Wood and H. F. Formad, of Philadelphia, as to the effects of inoculating lower animals with diphtheritic exudation. Within the past few weeks Dr. Wood has been authorized to continue his researches on this most important subject."

This paper recites facts and experiments of great interest in their scientific relations, and in their probable bearings upon sanitary questions of vital importance to the public health. The apparently positive demonstration of the fact that a fungoid organism found in healthy and in inflamed, but non-diphtheritic, throats may yet, under certain unknown conditions, assume an active state, as shown by an unlimited power of generation in culture experiments, which is not exhibited to anything like the same extent by the innocuous form of this organism, and in this active state will give rise by inoculation to all the phenomena of malignant diphtheria, is in complete accord with parallel phenomena ascertained by the independent observation of Pasteur, Sternberg, and others, as to the identical morphological characters of harmless micrococci and of those which produce fatal septicæmia. It suggests, moreover, an analogy with the striking phenomena so recently narrated by Pasteur in his remarkable address before the International Congress in London,

which phenomena he has turned to so useful an account in the protection of animals against certain malignant diseases. By inoculating sheep and cattle with the poison of charbon, attenuated by means of certain specified processes of artificial culture, he has demonstrated that this modified virus is shorn of its malignancy, while it yet secures the inoculated animal from any further attack, thus greatly extending the sphere of operation of the principle involved in the immortal discovery of Jenner, and furnishing a new proof of the germ theory of disease in some of its most striking applications.

"XII. Researches by Dr. G. M. Sternberg, U.S.A., upon suspended particles in the air of places liable to infection, which were commenced in Havana and have been renewed in New Orleans. These researches include an investigation upon organized particles from swamps and other malarious localities, with the view of testing the accuracy of the observations of Klebs and Tommasi-Crudeli, and others, on the existence of spores alleged to be the producing cause of malarial fevers."

The experiments of Dr. Sternberg, repeating those of Klebs and Tommasi-Crudeli made in the vicinity of Rome, as a result of which they announced the discovery of a special organism which they consider to be the specific cause of the malarial fevers, seem to indicate a source of fallacy in their conclusions. Those observers seem not to have been cognizant of the fact that healthy rabbits not exposed to malarial influences, either naturally or by inoculation, do often exhibit diurnal variations of temperature (dependent apparently upon changes of external temperature or other non-malarial influences) as pronounced as those held by them to be indicative of malarial paroxysms. He further shows that the *post-mortem* appearances in the spleen, regarded by those observers to be the effect of malaria, are not in fact evidence of death from that cause, inasmuch as similar changes are found in the spleens of rabbits dead from septicæmia produced by the subcutaneous injection of human saliva. But while thus indicating the insufficiency of the evidence on which Klebs and Tommasi-Crudeli have based their conclusions, Dr. Sternberg does not feel warranted in denying the alleged relation of the fungoid organism to malarial fevers, — a question which it is probable can only be fully settled by experiments on man himself.

In connection with these experiments of Dr. Sternberg, attention is invited to a special report by the same gentleman on "A fatal form of septicæmia in the rabbit, produced by the subcutaneous injection of human saliva." In this paper Dr. Sternberg incidentally narrates several facts going to show the occasional acquisition of virulent qualities by micro-organisms, which, under other circumstances, are quite harmless, and makes this important deduction: "The fact observed by myself, that during the summer months the mud in the gutters of New Orleans possesses an extraordinary degree of virulence, shows that pathogenic varieties of bacteria are not alone bred in the bodies of living animals.

The more I study this subject the more probable it seems to me that in this direction lies the explanation of many problems which have puzzled epidemiologists, and that the sanitarians are right in fighting against filth as a prime factor in the production of epidemics, — a factor of which the *rôle* is easily understood if this view is correct."

"XIII. A report by Dr. J. J. Woodward, U.S.A., on the Pathological Histology of Yellow Fever, is hereto annexed.

"XIV. A report by Professor Abbe, of the Signal Service Bureau, on the possible relations between meteorological phenomena and vital statistics, and especially on the graphical methods of representing such data.

"XV. An investigation by Professor Ira Remsen, of the Johns Hopkins University, Baltimore, as to the amount of carbonic oxide in furnace-heated rooms."

The results of Professor Remsen's inquiries indicate possible sources of error in the well-known experiments reported by a committee of the French Academy in 1868–69, from which the conclusion was reached that cast-iron stoves, as soon as their temperature reaches dark-red heat, allow the escape of considerable quantities of the poisonous gas in question. Professor Remsen's observations go to show that in rooms heated by cast-iron stoves and furnaces there is not present in the immediate vicinity of the hot-air flues as much as 0.04 per cent. of carbonic oxide, and it remains to be shown whether such minute quantities of the gas, if present, can act injuriously on the health of those who breathe it.

"XVI. The investigation under the direction and supervision of Prof. J. W. Mallet, of the University of Virginia, with the coöperation of Prof. H. Newhall Martin, of the Johns Hopkins University, on the best method of determining the amount of organic matter in potable water, and the specific effects of variously contaminated water on the health of persons who drink it."

This has now been completed, and an abstract has been published in Sup. No. 19, Bulletin N. B. H., the publication of the full report being precluded by the failure of Congress to make any appropriation for printing the Bulletin.

The following extract from the condensed preliminary report gives the general conclusions fairly deducible from Prof. Mallet's very elaborate investigations: —

"GENERAL CONCLUSIONS, WITH A VIEW TO SANITARY APPLICATION, AS TO THE VALUE, SEPARATELY AND COLLECTIVELY, OF THE DIFFERENT PROCESSES OF WATER ANALYSIS WHICH HAVE BEEN UNDER EXAMINATION.

"1. It is not possible to decide absolutely upon the wholesomeness or unwholesomeness of a drinking-water by the mere use of any of the processes examined for the estimation of *organic matter*, or its constituents.

"2. I would even go farther, and say that, in judging the sanitary character of a water, not only must such processes be used in connection with the investigation of other evidence of a more general sort, as to the source and history of the water, but should even be deemed of secondary importance in weighing the reasons for accepting or rejecting a water not manifestly unfit for drinking on other grounds.

"3. There are no sound grounds on which to establish such general 'standards of purity,' as have been proposed, looking to exact amounts of organic carbon or nitrogen, 'albuminoid ammonia,' oxygen of permanganate consumed, etc., as permissible or not. Distinctions drawn by the application of such standards are arbitrary, and may be misleading.

"4. Two entirely legitimate directions seem to be open for the useful examination by chemical means of the organic constituents of drinking-water, namely, first, the detection of *very gross* pollution, such as the contamination of the water of a well by accidental bursting or crushing of soil-pipes, extensive leakage of drains, etc.; and, secondly, the periodical examination of a water supply, as of a great city, in order that, the normal or usual character of the water having been previously ascertained, any suspicious changes which from time to time may occur shall be promptly detected and their cause investigated.

"5. In connection with this latter application of water analysis, there seems to be no objection to the establishment of *local* 'standards of purity' for drinking-water, based on sufficiently thorough examination of the water supply in its usual condition.

"6. With the facts of this investigation before me, I am inclined to attach special and very great importance to a careful determination of the nitrites and nitrates in water to be used for drinking.

"7. If I had entrusted to me the charge of watching a large city water supply I should use all three of the principal processes for the examination of the organic matter present; each gives a certain amount of information which the others do not afford.

"Under circumstances admitting only of the use of simpler means of investigation, the albuminoid ammonia and permanganate processes might be employed together; but in no case should only one of these methods be resorted to, such a course entailing practically the neglect of carbon on the one hand or nitrogen on the other.

"SUGGESTIONS AS TO FURTHER INVESTIGATIONS IN GENERAL CONNECTION WITH THE SUBJECT-MATTER OF THIS REPORT.

"1. It is much to be wished that more extended biological experiments should be made upon the effects of water variously polluted on the lower animals, and that in such experiments the action of water introduced into the stomach, as well as hypodermically injected, should be tested, and other animals (such as dogs) used as well as rabbits.

"2. It would be well to have chemical examinations, on a strictly uniform plan, from time to time, made of the water supply in a few of

the largest cities at periods when, not mortuary statistics, but the general assent of well-informed members of the medical profession, ascertained through local sanitary authorities, indicates unusual prevalence of, or unusual exemption from, the classes of disease most probably capable of origination from the organic pollution of drinking-water.

"3. I would *especially* suggest a combined chemical and biological inquiry as to the possible effects upon living animals of the ferment or ferments of nitrification in different stages of that process. In connection with this some minor questions connected with the development of nitrites and nitrates from decomposing organic matter are pointed to, by facts observed in the course of the investigation now reported on, as deserving further examination."

In further explanation of the last suggestion, Prof. Mallet has stated in a letter that "the results as to the presence of nitrates and nitrites in the waters received from various parts of the country, with medical testimony as to their having, in all probability, actually caused disease, have suggested to me (Prof. M.) very strongly the idea that these salts, instead of merely affording evidence of the previous contamination of the water with nitrogenous matter, may possibly afford proof of the presence of *noxious organisms* in the shape of those now pretty fairly proved to be concerned in nitric fermentation. Is nitrogenous matter, when undergoing decay so far as to produce nitrites, more or less noxious than the same kind and amount of such organic matter when decaying under such conditions as to produce ammonia? If the dangerous character of nitrifying decay were established, a number of important practical conclusions would result. Among others a more prominent and better-founded importance should attach to the simple and accurate determinations of nitrates and nitrites in water analysis for sanitary purposes."

The preliminary abstract of Prof. Mallet's paper has been reprinted in several scientific journals, and has elicited the highest praise and created an eager demand for the full paper.

"XVII. The history of quarantine in the United States, exhibiting the occasions which give rise to quarantine legislation, or attempts at such legislation by States or by the General Government, prepared by Dr. Stephen Smith, a member of the National Board of Health."

In addition to these papers mentioned in the Annual Report of the Board for 1880 a report on the various systems of sewerage in the principal cities in Europe, including an extremely valuable and exhaustive discussion of the general subject, has been made by Rudolph Hering, sanitary engineer, Philadelphia. The text of this report has been published in Supplement No. 16 to the *Bulletin*. The plates will doubtless be printed along with the annual report of the Board, according to the usual custom in regard to reports made to Congress; but the entire edition will be for the use of members of Congress, and a year or two may elapse before it leaves the office of the public printer.

An investigation into the sanitary condition of summer resorts has been made by Ernest W. Bowditch, sanitary engineer of Boston. Mr. Bowditch had previously made for the State Board of Health, Lunacy, and Charity of Massachusetts an excellent report on the drainage of summer hotels and boarding-houses. Nearly all of those which he examined, about one hundred and fifty in number, were found to be very unsatisfactory, and threatened to become at any time foci of typhoid fever and other infectious diseases. The Board was induced to invite Mr. Bowditch to extend this inquiry to Newport, Long Branch, and other places which, from the wide extent of country from which they derive their patronage, assume a national character and importance. It is a gratifying fact that for the most part the several proprietors whose premises were inspected exhibited every disposition to correct the sanitary evils discovered by the inspection. At Newport several of the citizens, associated as a society for mutual sanitary protection, desired a more thorough survey of the city than was consistent with the general plan of the Board, and agreed to pay the cost of the additional work.

The National Board of Health, with the view of securing, as far as practicable, uniformity in the methods of collecting and reporting vital statistics, called a convention of registrars and other local authorities interested in this subject, which met at Washington, May 6 and 7, 1880. After a full discussion on this subject, and on the nomenclature of diseases, a committee, of which Dr. Billings was made chairman, was appointed to formulate the views of the convention, and was directed to report to the National Board of Health, to which body the final disposition of the matter was transferred.

Two very valuable reports have been submitted by Dr. Billings, one printed as Supplement No. 9 of the *Bulletin*, the other in No. 33, Vol. III. From an extensive correspondence with the local authorities, Dr. Billings was warranted in making the statement that the general recommendation, made in the latter report, had been approved by the different State registrars of vital statistics, namely, that the United States could best secure uniform registration by paying a certain limited amount for reports, to be made upon forms to be prescribed by the General Government.

An investigation into the cause and nature of malaria, the details of which had been planned with care, involving the coöperation of the State Boards of Health of Massachusetts, Rhode Island, Connecticut, and New York, as to the topographical and clinical data, while the scientific work with special regard to the biological relations was assigned to Dr. W. B. Whitney, of Boston, had just been entered upon when the recent action of Congress necessitated its suspension. It is to be hoped that this very important investigation will be resumed under the auspices and at the expense of the above-named States, whose recent invasion by severe malarial fevers gives them so vital an interest in the subject.

Since the suspension of the publication of the *Bulletin*, a very valuable report to the National Board of Health, by Ed. S. Philbrick, C.E.,

and Mr. E. W. Bowditch, sanitary engineer, concerning the liability of different styles of traps to lose their water seal by siphonage, etc., under various circumstances, has been printed in the *Sanitary Engineer*, of New York, Vol. VI., No. 14, Aug. 31, 1882. This paper has developed some novel results of considerable importance, and its conclusions deserve the most careful consideration of all persons interested in the sanitary arrangements of dwelling-houses.

In addition to the special scientific investigations and reports included in the foregoing enumeration, the following sanitary surveys of places supposed to be remarkably unhealthy, or liable to become so, were made under the auspices, and at the expense, of the National Board, and the results transmitted in connection with its first two annual reports.

I. A sanitary survey of the eastern coast of New Jersey, bordering on New York harbor, carried on with the aid of the National Board of Health, under the direction of the State Board of Health of New Jersey.

II. A sanitary survey of the city of Memphis, under the direction of a special committee of the Board.

III. A report by Dr. Charles Smart, U.S.A., on the water supply of Mobile and New Orleans.

IV. A sanitary survey of selected portions of Baltimore city, which was undertaken in compliance with the request of the council, and was conducted by Dr. Charles W. Chancellor, Secretary of the State Board of Health of Maryland. His report and the correspondence with the Mayor of Baltimore and other authorities, which preceded and followed the work, have been published in Supplement No. 10 to the *National Board of Health Bulletin*, Nov. 13, 1880.

The collecting of information with regard to the sanitary condition of the principal cities and towns in the United States was regarded by a majority of the Board as an exceedingly important part of its duty under the provisions of the constituting act, which requires that "the Board shall make, or cause to be made, such official examinations and investigations at any place or places within the United States, or at foreign ports, as they may deem best; to aid in the execution of the act and the promotion of its objects," one of which is then stated to be "to obtain information upon all matters affecting the public health; to advise the Executives of the several States on all questions submitted by them, or whenever, in the opinion of the Board, such advice may tend to preservation and improvement of the public health.

Accordingly, as stated in the annual report for 1879, work in this direction was organized at the first session of the Board by the printing, with additions and corrections, of a series of schedules of questions for the sanitary survey of a city, the original schedules for this purpose having been prepared several years previously by a committee of the American Public Health Association. A number of these schedules have been returned to this Board properly filled up, and others are in course of completion. It is believed that the result has already done

good in indicating the lines of inquiry which should be pursued by municipal authorities in relation to sanitary matters, and that hereafter a large amount of valuable information will be collected by this means.

The estimate of the Board as to the value of this work was strongly endorsed by the National Academy of Sciences, which, after recommending, in a report made to Congress in December, 1879, "that the Board should continue the special scientific investigations already undertaken by it, as mentioned in its annual report, and that, in addition to these, investigations should be undertaken by it, or under its direction, upon the subjects of cholera, malaria, typhoid, and typho-malarial fevers, diphtheria, and cerebro-spinal meningitis," proceeded to say that "in addition to these investigations there should also be carried on sanitary surveys of places remarkably unhealthy, or liable to become so. The only limitation which should be placed on these investigations and surveys should be the amount of funds appropriated for that purpose. It is believed that for the present the sum to be annually allowed for such investigations and sanitary surveys should be $30,000."

It was soon ascertained that certain members of Congress took a very different view as to the value of these investigations. The Sundry Civil Appropriation bill, as reported from the committee at the last session of Congress, allowed only $25,000 "for aid to State and local Boards of Health, and the local quarantine stations in carrying out their rules and regulations to prevent the introduction and spread of contagious and infectious diseases in the United States"; and this only with the express *proviso* that hereafter the duties and investigations of the Board of Health shall be confined to the diseases of cholera and yellow fever." Subsequently, with some difficulty, an amendment was carried, by which small-pox was added to cholera and yellow fever, as a legitimate object to come within the scope of the "duties" of the Board.

It was gravely asserted on the floor of the House of Representatives, that when Congress assembled in December, 1879, the Board had made contracts, not only consuming the whole $500,000 appropriated in June of that year, but had to come forward and ask for a deficiency of $300,000 or $400,000. This *ex cathedra* statement as to the alleged wasteful extravagance of the Board had doubtless a damaging effect, and apparently there was no one present who had informed himself sufficiently to correct the statement, although documents were in possession of two committees which would have exhibited its great and most extraordinary inaccuracy. Some weeks prior to this debate in the House of Representatives, Senator Harris, of Tennessee, in a printed report from the special committee on the best means of preventing the introduction and spread of epidemic diseases, had stated the fact, derived from official documents, which had been laid before the two houses of Congress, that "the expenses of the Board for the *first three years* of its existence, ending April 3, 1882, aggregate $506,216.17, or an average of $168,738.72 per year, the whole expenditures for the three years being about $44,000 less than the amount appropriated for the first year."

Senator Harris was the father of the bill under which the appropriation of the $500,000 was made, and kept himself well informed as to the operations and expenditures of the Board from year to year.

In point of fact the total expenditures of the Board from its organization to December 31, 1879, one month later than the time designated as that at which it had made contracts for the full amount of $500,000, "with a deficiency of $300,000 or $400,000," were exactly $154,002.42. When it is remembered that yellow fever existed during the summer of that year in New Orleans, Memphis, and several points in Mississippi and Arkansas, for the treatment of which $47,742.03 were expended in Tennessee, $13,628.30 in Louisiana, $13,180.24 in Mississippi, $7,539.51 in Arkansas, besides lesser amounts, making a considerable aggregate, in neighboring States which were threatened, it will be perceived that the expenditures for the general purposes of the Board were marvellously small. It was at this very time that the financial administration of the Board received the voluntary tribute of the warmly expressed commendations of the First Comptroller of the Treasury, Judge A. G. Porter, the present distinguished Governor of Indiana.

It will thus be seen that the National Health organization, which the Association has been so largely instrumental in bringing into existence, is in some danger of extinction from the want of adequate support by the national legislature. In view of this fact, it is considered pertinent and proper to suggest that the members of this Association may do a most useful work in instructing their representatives in Congress as to the value of the work performed by the National Board of Health, and the indispensable necessity of more liberal appropriations to enable it to carry on this work with due efficiency. Without such efforts there is danger of losing the ground gained in 1879, which, if so lost now, will probably not be regained for many years to come. In making these efforts it may be important to bear in mind the sources and character of the hostile agencies combined to overthrow the National Board of Health. We may be permitted to refer to a few of them: —

1. The State Board of Health of Louisiana, backed by a portion of the press of New Orleans, in its repeated allegations that the National Board of Health has interfered with and obstructed the local authorities, instead of aiding them as required by law. The interference consists in the National Board establishing an inspection service within the limits of New Orleans, being induced to take this action in compliance with the request of the health authorities of the Mississippi-valley States, including those of Louisiana itself. Nothing short of this will satisfy other communities having intercourse with that city, which would certainly be quarantined by its neighbors to a most inconvenient extent if it were not for the protection it derives from the certificates of the inspecting agents of the National Board.

2. The powerful influence of the Treasury Department, which asserts a claim to the disbursement of all funds appropriated by Congress for the suppression of epidemics, and to the selection of its own medical officer,

the chief of the Marine Hospital Service, as its agent in these operations, although an express provision of an existing act of Congress repeals all previous acts conferring sanitary powers on that branch of the public service, and clothes the National Board of Health, which includes in its membership a detailed officer of that service, with all the power assumed by the General Government in respect of quarantine and sanitary matters.

3. The extreme jealousy of the great commercial communities in regard to all quarantine restrictions on commerce. Even those who admit the importance and necessity of such means of protecting the public health fear to commit quarantine powers to agents of a central board over whom they can exercise no control. They prefer an exclusively local administration, deriving its authority from the consent of a local constituency, and subject to its control.

This is a very natural feeling, and is in accordance with the traditional policy of the General Government from its very commencement down to the present time. The wonder is that it should be urged as a ground of objection to the National Board of Health, which is not clothed with any such powers, and has never attempted to assume any. Its quarantine functions are strictly limited to the duty of coöperating with, and as far as it lawfully may of aiding, State and Municipal Boards of Health in the execution of *their* rules and regulations to prevent the introduction of contagious and infectious diseases into the United States.

With singular inconsistency, some of these parties have indicated a desire that the National Board of Health should be supplanted by another branch of the public service, which for years has made earnest efforts to bring about a change in the settled policy of the Government, in order that it may be clothed with independent quarantine authority, to be exercised throughout the entire maritime coast of the United States, irrespectively of the consent or wishes of the local authorities.

4. As composed of medical men, selected without regard to party affiliations and wielding no political patronage, the Board finds no hearty support from politicians of either of the great parties of the country.

In conclusion, we desire to say that as the present membership of the Board was largely due to the unsolicited choice of the advisory committee of the Public Health Association, we abide its decision as to our longer continuance in these positions, and wish, if deemed consistent with the public good, to be relieved by the selection of others, who may, perhaps, command a larger share of public support.

XI.

THE IMMIGRANT INSPECTION SERVICE OF THE NATIONAL BOARD OF HEALTH AT PORT HURON, MICHIGAN, AND ITS BEARING ON THE PUBLIC HEALTH OF THE WEST AND NORTH-WEST.

By H. R. MILLS, A.M., M.D.,

Port Huron, Mich.

Port Huron, Mich., is a thriving city of about twelve thousand inhabitants, situated at the foot of Lake Huron, at the head of the St. Clair river. The records of the office of the United States Collector of Customs, located in that city, show that during the period of three years, ending June 30, 1882, two hundred and seventy-six thousand three hundred and twenty-three immigrants were admitted into this country at that port. It may have escaped the attention of many, living at a distance from this gateway of the North-west, that such a large number is annually pouring in upon the country at that point. It may not be known to some, that more immigrants are being received annually through Port Huron than through any port of entry in the country, outside of New York. In point of fact there are nearly as many, if not more, immigrants entered at this port than at Portland, Boston, Baltimore, Philadelphia, and New Orleans, combined.

The fact that such a large number was being received at that port, amounting to over one hundred thousand in the year 1881, coupled with the fact that cases of small-pox were being detected on the trains on which they came, and that the disease was spread extensively in the cities and districts where they were distributed, induced the State Board of Health of Michigan, in July, 1881, to ask the National Board for aid in the suppression of the then rapidly approaching epidemic.

The National Board was asked to appoint sanitary inspectors at Port Huron, and other points in Michigan where immigrants were being received. After a long and very unfortunate delay, occasioned, in part, by the death of the lamented President Garfield, the request of the State Board of Michigan, as were similar requests of other State Boards, was granted. Inspectors were appointed at Port Huron and Detroit, to act under the direct supervision of the Secretary of the State Board of Health.

At Port Huron the inspection began on the first day of June, 1882. Preliminary work, however, was begun on the 15th of May previous. It may not be out of place here to mention that, during this preparatory work, the first two trains inspected were found to contain a case of small-

pox each, much to the surprise of some who had considered, or said they considered, the work of train inspection unnecessary. The sanitary condition, in other respects, of the trains arriving at Port Huron at that time was very bad. In numerous instances old dirty box-cars were roughly fitted up with the most meagre accommodations, and crowded to their utmost capacity. As should be expected, much sickness prevailed among the passengers, owing, in part, to the filthy condition of the cars, and, as I was told, to exposure on shipboard during detention in the ice at the mouth of the St. Lawrence. Cases of measles, pneumonia, whooping-cough, and diarrhœa among children were frequently encountered, and, occasionally, syphilitic symptoms. Such cases as required detention and treatment were promptly cared for by the inspectors, with the full and hearty coöperation of the railway authorities, who, by the way, have always manifested a desire to do all in their power to aid in the work. Those able to continue their journey were prescribed for and cared for as well as circumstances would permit.

The following table will give something of an idea of the work performed by the inspectors during the four months ending September 30, and of the condition of the immigrants inspected during that time: —

	Number Inspected.	Vaccinated.
June	5,479	325
July	4,830	2,334
August	2,293	1,526
September	5,306	3,749
Total	17,908	7,964

It will be seen, from the above table, that after the month of June there is a great increase of the percentage of those vaccinated. This, however, does not arise from the finding of a greater percentage of protected persons during that month. It arises, in part, from the fact that there was considerable delay in receiving virus at the beginning of that month; and, in part, from the more scrutinizing inquiry into the conditions necessary to protection, and an increased familiarity with the work during the months that followed.

Out of the twelve thousand four hundred and twenty-nine inspected during the *quarter ending Sept. 30*, seven thousand six hundred and nine were vaccinated. In other words over sixty-one per cent. of the immigrants arriving at Port Huron during that period were found unprotected, and required vaccination.

In order to fully appreciate the influence of the immigrants arriving at Port Huron on the public health of the west and north-west, and the country at large, it will be necessary to look over carefully, for a few moments, the material which from day to day and month to month is being received. Immigrants arriving here are naturally divided into two general classes, viz., the Canadian immigrants and the foreign immigrants.

The first class comes almost entirely from Canada. A few come from the islands of the mouth of the St. Lawrence, outside of the Dominion. These people arrive here without having passed any previous inspection or quarantine whatever. They come from the provinces of Ontario, Quebec, Nova Scotia, New Brunswick, Prince Edward Island, Cape Breton, Newfoundland, and neighboring territory. Leaving out the province of Ontario these places named are notorious among customs officers and railroad men as being infected with small-pox throughout the year. The numerous pock-marked faces encountered, among especially the French element of this class, attest the truth of these reports and their title to credence.

They come, many of them, unvaccinated, and with strong prejudices against such a measure. I am informed, by those who have resided in their midst, that while they have a holy horror at the idea of vaccination they often seek opportunities for exposing themselves and their children to the contagion of the disease itself, and await the result with placid indifference. It is in this class of immigrants that we find the greatest number of adults who have never been vaccinated. The inspectors at the station with which I am connected not unfrequently report whole families — father, mother, and grown up-children — in the class of primary vaccinations. This is the kind of material we are receiving in this class of immigrants. And it comes largely at a time of the year when small-pox contagion thrives best, *i.e.*, during the fall and winter months, and spreads itself out through the lumber woods of Michigan and the Northwestern States and territories.

The foreign immigrants arriving here are naturally again divided into two classes, viz., the Quebec class and the New York class. The Quebec class leaves the steamship at Point Levi, near Quebec, and approaches the United States *via* the Main Line of the Grand Trunk Railway. The New York class debarks at Castle Garden, and reaches Port Huron *via* the Erie Railway and the Buffalo Branch of the Grand Trunk, or over the Great Western Division of the Grand Trunk.

The Quebec class consists of Scandinavians and foreign Scotch and English, with a few representatives from all the countries of northern Europe, *i.e.*, Russian Jews, Prussians, Danes, Poles, Finlanders, and Laplanders.

No system of inspection or vaccination prevails on board the steamship landing at Quebec. An occasional working vaccination is discovered, however, as the result of vaccination on board these steamers. But generally, when one is found, it is the work of home vaccination. The records of the Inspection Service show that a considerable number of primary vaccinations have been performed among these people during the existence of the service. An analysis of the inspection reports shows a very large percentage requiring vaccination and revaccination.

An inspection by the Canadian authorities at Quebec is said to be made; but I am led to believe, from reliable information, that it is not at all rigid. Certainly no vaccinations are performed there. Transportation

companies are not naturally disposed to be over-critical in the examination of their passengers at the point of debarkation, when the detection of disease on board would necessarily result in quarantine for two, three, or more weeks. The tendency is to get rid of their passengers as soon as possible. If suspicious cases are discovered on a train local authorities are inclined to shirk their duty, and send them along; and railway authorities are helpless, until they come within the jurisdiction of the National Board of Health of the United States.

The New York class consists largely of Germans, with a sprinkling of Southern Europe. The most of the people constituting this class bring *protection cards* with them, which are issued on shipboard. But here, again, we find the evidence of the difference of views in vogue as to what constitutes protection; the rule for vaccination every five years being entirely disregarded. The evidences of recent vaccination on these New York steamers are not numerous, as we have found only two hundred and ninety-seven recent effective vaccinations during the four months of the Inspection Service, and a portion of these belong to the Quebec class. More than fifty per cent. of those coming *via* New York, during the season, have been found insufficiently protected, and required vaccination on their arrival at the station at Port Huron.

Thus, briefly, we have the material we are receiving before us. The relative size of these classes varies with the season of the year.

During the fall and winter months the Canadians largely predominate, and, after the close of navigation on the St. Lawrence river, the Quebec class is divided between Halifax, Portland, Boston, and other ports.

We see by the records that nine hundred and seventy primary vaccinations have been performed at Port Huron, up to Sept. 30. Nearly a thousand persons without a shadow of protection; a thousand magazines ready to explode on exposure to the first passing spark of contagion; and six thousand nine hundred and ninety-four (6,994) more whose protection, on account of the long period since vaccination, is very questionable, if not absolutely worthless, — nearly eight thousand people coming into the country unprotected from the disease during the period of four months.

What, then, is the bearing on the public health of the North-west of this influx of strangers? What can we expect from the incoming of such a stream, if allowed to pass into our national channels, and be taken up and circulated throughout our national system, unfiltered and unpurified? Here we see contagion itself, and food for contagion; and who shall say which is to be feared the most, borne along, side by side, in this living tide of humanity, threatening to carry death and dismay to the homes and hearts of our people?

What ought we to expect if this partially contaminated and largely unprotected stream is allowed to flow on and spread itself out over our land, breeding and feeding pestilence wherever it goes? The experience of the past few years is a sufficient reply.

We must expect to see a preventable disease running riot in the land,

and hundreds of lives annually destroyed which should have been saved. The recent experience of Cincinnati, Chicago, and the North-west, furnishes ample illustrations. This is what we must expect as the natural result of such a combination of causes.

It is to prevent such calamities that the National Board of Health has established inspection stations, and appointed sanitary inspectors along our frontier. The scope of the Inspection Service takes in consideration all the approaches by which we may combat disease and death in any form. The sanitary inspector is not a mere vaccinator. His duties have a wider range than simply fighting a single disease. All the sanitary conditions by which the immigrant may be surrounded are subjects which should engage his close attention, and to the improvement of these conditions he bends his energies.

Thus we see the conditions which exist, and can prognosticate with unerring certainty the results which must follow, unless wise and thorough measures are adopted to remedy the evil; and the remedy lies ready-made at our hands. A thorough systematic course of inspection, vaccination, and disinfection, will as surely rid the land of this one disease, at least, as day is to follow night. The time has come when the grand attack on this disease should be made, not only on our borders along the coast, but in every village and hamlet in the land.

Compulsory vaccination laws are not necessary absolutely. I am not a believer in that measure. The name itself has a tendency to arouse opposition among American people. But, by a thorough, persistent, comprehensive system of inspection, vaccination, and disinfection at such ports as are under control of the Inspection Service, and in the cities, villages, and towns throughout the country, we will accomplish far more than by forcible measures.

XII.

A SUMMER EPIDEMIC OF SMALL-POX CAUSED BY DIRECT IMPORTATION FROM GERMANY.

By A. W. CANTWELL, M.D.,
Davenport, Iowa.

On the 19th of April Dr. A. Hoepfner notified the city clerk of a case of small-pox at No. 615 West 4th street. Upon investigation it was found that they were emigrants, who had arrived in our city on the 15th of April, actually sick at that time. Their history is as follows: There were two men, their wives, and one child. They said they were vaccinated before leaving Germany, and again while on shipboard, with no effect. During the voyage a child — not theirs — died of small-pox. On their arrival at quarantine station, New York, a woman and child were taken off, supposed to have small-pox. The steamer was detained only a day, however, and sailed thence to Castle Garden, where they were landed and allowed to proceed on their way to the West. This is their story. The name of the steamer was the Cimbria, which arrived in New York April 12.

In the Michigan *Medical News* of Sept. 25, Dr. Henry B. Baker, Secretary of the State Board of Health of Michigan, gives an account of a few cases of small-pox in Michigan, originating from the same steamer.

One word here. I think the above shows the wisdom of maintaining and encouraging the "Immigrant Inspection Service of the National Board of Health"; for, if it had been in operation in April, Michigan and Iowa might have escaped the terrible ordeal they have passed through.

Mrs. Petersen had confluent small-pox. The other four were vaccinated April 25. Mr. Petersen had varioloid. The next day the child, one year old, broke out with full eruption. The two families, being relatives, lived together. Their rooms were of good size and airy. Vaccination worked nicely in the other two adults, and they escaped, though having taken care of the others all through their sickness. We wanted to take them to our small-pox hospital. This is a building of which we are justly proud. It was erected in 1876, under the supervision of Dr. R. J. Farquharson, then President of the Medical Board of Mercy Hospital, now Secretary of our State Board of Health. The plan is one recommended by our State Board, and is certainly admirably adapted to its purpose.

These people, having money to take care of themselves, declined to go to the hospital. They were ordered to stay within their enclosure, and

the marshal was to see that the order was carried out. I believe they did as they were told. No other cases appeared until May 15, when Dr. Hoepfner again reported two cases in the house adjoining, on the west, both children, whose parents did not believe in vaccination. Their tune changed, however, and both the man and his wife became anxious to be vaccinated. The next case appeared in the house adjoining the first, on the east. Both of these families had treated the placarding of the first house as a humbug, and, contrary to orders, had gone into the back-yard to a well used by the infected people, and freely conversed with them, the above results very naturally ensuing.

On the 17th of May our City Council passed a health ordinance, in compliance with an act of our last Legislature, giving cities, under special charter, power to appoint a Board of Health, with inherent authority to make its own rules and regulations. A Board was accordingly created, of which I was elected a member and its physician. At a meeting, the next day, it was ordered that the city marshal, acting under my instructions, should remove all sick and infected persons to the small-pox hospital who were able to be moved. The two sick children, together with their father, mother, and aunt, who were well, and the lady in the adjoining house with varioloid, with her husband, who was well, were all sent to the hospital. Each well person entering the hospital was revaccinated. All persons living within two blocks of the infected houses were ordered vaccinated. On the 21st of May a boy ten years old, and on the next day another boy seven years old, neither having ever been vaccinated until three days before, were taken with small-pox in the same house occupied by the lady with varioloid, the house being a double tenement. The seven-year-old boy died on May 28. This was the first death. The father, mother, and six children — all vaccinated, the children for the first time — remained in the pest-house two weeks, and all escaped. All houses, as fast as reported infected, were quarantined. Fourth street, where all these cases were, was barricaded, and a guard kept there day and night.

On the 20th of May a young lady was reported with small-pox at 322, and the same day a boy, at 321. The marshal, seeing a doctor emerge from the latter house, asked the trouble. The doctor seemed indisposed to tell; but, the house being visited, the boy was found to be in the suppurating stage of confluent small-pox. The case had been kept hidden by the boy's parents, and no doctor called until the night previous. The doctor, who was, or thought himself to be, a homœopathic physician, instead of vaccinating the balance of the family, had given them vaccinium, — three drops one morning, — and thought that adequate protection. Himself and wife had been vaccinated; but he did not, and said he would not, vaccinate his children. We gave him to understand that he should revaccinate himself and wife and vaccinate the children, or we would send him to the hospital. He concluded to yield to our terms and retain his liberty. His patient died a few days thereafter. I vaccinated the family, three of whom had varioloid after removal to the hospital.

This family, unfortunately, supplied the neighborhood with milk; and children kept coming to the house until it was quarantined, May 23. From this time forth the disease seemed to progress. In the square where it first appeared we had eighteen cases; in the square next west, eleven cases; on Gaines street, between Second and Sixth, sixteen cases. Gaines street runs between the two squares first infected. The square, or block, in which the plague first appeared, had a population of two hundred and nine, about one hundred and fifty of whom were vaccinated, many of them for the first time. The block next west had a population of two hundred and seventy-five, two hundred of them vaccinated, half, for the first time, being children.

In the infected district, thus marked out, we have forty-nine cases. Six cases appeared in people who left town, having lived in that district, making a total of fifty-five cases in a space comprising eleven blocks, and having a population of two thousand one hundred and thirty-four. The other twenty-two cases were scattered here and there in different parts of the city; even these, in almost every instance, could be traced back to the infected district. In one house there were four regular cases of small-pox. This was another instance where no physician had been called. They lived in a brick row of six tenements, theirs being second in the row. About sixty people lived in these tenements, not one of whom was infected, so closely were they kept guarded, showing the virtue there is in strict quarantine and vaccination. Our number of cases kept increasing, so that by the first of June we had in hospital ten cases and fourteen well people.

We were compelled to put up a building for the well and those convalescing. We built it 12 × 32, with four rooms. With all this precaution the number kept on gradually increasing, until on the 15th day of June we had fifteen in hospital and twenty-two in the city, making a total of thirty-seven. Three days later there was an indication of a letting up. Hitherto, with all our efforts by vaccination and guarding, we could not get control.

On July 1st we had twenty-five; on the 10th, eight; on the 17th, three; on the 23d there was an increase, the number on that date being eight, and this number continued until August 1. On the 10th of August we had but two, and on September 4 the end was reached, when the hospital became vacant of tenants. There were none out of the hospital after the 19th of August.

We had, at various times, forty-three well persons in the pest-house, all thoroughly vaccinated. Not one of them became infected. One girl who had to care for two children in the city, for some days previous to entering the hospital, and who was vaccinated on entering, was taken with varioloid on the sixth day.

Thirteen men, who had been exposed in a boarding-house, we housed in a tent, on the hospital grounds, about three hundred feet east of the hospital. All kept well.

There were in quarantine, at various times, from seven, the lowest

number, up to one hundred and sixty-seven, the latter number being attained on the 26th of June. I have a register of the actual number of sick and in quarantine for each day. The total number infected was seventy-one, of which number thirty-two were never vaccinated; three of the latter were modified. Twenty-nine adults were vaccinated in infancy; three of this number had small-pox. Others who had been vaccinated were taken very severely, as much so as those who had regular small-pox; but on the eighth or tenth day the pustules would dry up, and convalescence would be very rapid.

Five cases were over sixty-five years old,— three of these over seventy, only one of this number dying. This case was an old man. He had varioloid, very light; but really died of pneumonia three days after entering the hospital, having been taken from a basement tenement.

The ages of the others were from nine months to forty-five years. The total number of deaths was eleven. Of this number three were of a hæmorrhagic nature, all being females.

One man, sixty-eight years of age, had epistaxis quite freely but once; was a long time convalescing.

To prevent pitting vaseline was used freely from the start, and it proved very successful.

XIII.

SMALL-POX IN BETHLEHEM, PENNSYLVANIA, AND VICINITY, IN 1881–82.

By JOHN W. DETWILLER, M.D.,
Bethlehem, Pa.

The borough of Bethlehem, Northampton Co., Penn., is situated on the north side of the Lehigh river, fifty-two miles north of Philadelphia, and twelve miles west of the Delaware. The situation is high; drainage, good; soil, limestone. Population five thousand three hundred and ninety-three.

The borough of South Bethlehem, Northampton County, on the opposite side of the river, is at the base of the Lehigh mountain, a range of the Blue. The situation is principally on low land; drainage, only tolerable; soil, disintegrated igneous rock, sand, alluvium, and limestone. Population, five thousand one hundred and twenty-five.

West Bethlehem, and Old South Bethlehem, Hanover Township, Lehigh County, are divided from the borough of Bethlehem by the Monocacy creek. Population, one thousand eight hundred.

The situation of West Bethlehem is high; drainage, good; soil, limestone and drift of the glacial epoch.

Old South Bethlehem is low, subject to occasional inundations; drainage, poor; soil, sand and alluvium.

The population of South Bethlehem suburbs, Salisbury Township, Lehigh County, University District, and Saucon Township, Northampton County, is one thousand.

Hottlesville Extension, Bethlehem Township, Northampton County, northern suburbs of Bethlehem, has a population of about two hundred.

There had been no cases of small-pox in the Bethlehems, since the spring of 1872, until January 22, 1881, when the first case made its appearance in the borough of South Bethlehem, which was contracted in Philadelphia. From that time there were sporadic cases in the Bethlehems until March 13, 1882, when the disease appeared in the form of an epidemic,—over seventy cases developing in the course of thirty-six hours, all living in a small area.

At the time of this sudden outbreak, and a few weeks before, there was great humidity of the atmosphere, heavy and dense fogs being suspended over the borough during the night and the greater part of the day. Twelve or fourteen days previous to the appearance of the epidemic, infected clothing or bedding was burned in the neighborhood of New street,

above Fourth, the heat of which burning was evidently insufficient to destroy the small-pox germs, but only served to diffuse them throughout the air, together with dense volumes of smoke. Owing to the humidity of the atmosphere they were held long enough in suspense, in a very low stratum, to endanger all those in that neighborhood who were susceptible to contagion. This is the only plausible way in which such a sudden outbreak in so small an area can be explained.

The Board of Health exerted itself vigorously to prevent its further extension, by a system of hospital and quarantine discipline, and by instituting free vaccination.

It was owing solely to the vigilance of their Health Board that the borough of Bethlehem on the north side escaped a similar epidemic, considering the constant exposure of the laboring classes to contagion in their daily passage to and from the iron and zinc works in South Bethlehem.

West Bethlehem and Old South Bethlehem were under one Health Board; University District and Saucon Township also under one head.

Salisbury Township had its separate organization, and free vaccination was generally proclaimed.

	Cases.	Deaths.	Population.
Cases in South Bethlehem	457	136	5,125
" Bethlehem	69	18	5,393
" Old South and West Bethlehems	87	17	1,800
" Saucon Township and University District	62	18	500
" Salisbury Township	6	2	500
" Hottlesville extension	4	1	200
Total	685	192	13,518

Per cent. of cases to whole population in the Bethlehems and suburbs	.05
" " " " Borough of Bethlehem	.01
" " " " " South Bethlehem	.09
" " " " W. and O. S. Bethlehem, nearly	.05
" " " " Salisbury Township	.01
" " " " Saucon Township and Unversity District,	.12½
" " " " Hottlesville extension	.02

Per cent. of deaths to cases in the Bethlehems and suburbs	.28
" " " Borough of Bethlehem	.26½
" " " " South Bethlehem	.29
" " " West and Old South Bethlehem	.20
" " " Salisbury Township	.33
" " " Saucon Township and University District	.28
" " " Hottlesville extension	.25

There are few facts in sanitary science that have made themselves more manifest in all our experience than the efficacy of vaccination as a preventive of small-pox. In a number of instances where the entire family was vaccinated, after one member had taken small-pox, those whose vac-

cination was successful escaped infection, while those unsuccessfully vaccinated were attacked by the disease.

The press is a power that cannot be overlooked, having proved itself, in the time of distress, a great benefit to the people. Its columns were open to all, however conflicting their views, and many valuable suggestions were given in regard to the best modes of combatting the common enemy.

The Lehigh County Poor Directors acted in a truly benevolent manner. They cordially supported the Health Boards of their districts in their efforts to check the spread of the disease, by establishing free vaccination, and by supporting all their quarantined families. By their prompt precautionary measures they prevented the spread of small-pox in the thickly-settled districts, most of whose inhabitants belong to the laboring classes, and are employed in the borough of South Bethlehem.

While we, dwelling in the Bethlehems and suburbs, had well-organized Boards of Health it was no small matter to bridge the numerous obstacles in the way of enforcing their orders, owing to the inadequate provision of the Legislature to confer, any legal power upon Health Boards. May we not hope that, in future, acts will be passed that shall confer necessary power on such bodies at such a time?

XIV.

USES AND ABUSES OF ANIMAL VACCINATION.

By SAMUEL W. ABBOTT, M.D.,
Wakefield, Mass.

It is my purpose in this paper to present for your consideration the advantages which are offered by animal vaccination in preference to the older, and, until the beginning of the past decade, the more common, method of vaccination by humanized virus. I shall also refer to some of the abuses to which animal vaccination is liable.

Until the occurrence of the great epidemic of small-pox, in 1871–1873, throughout the United States, vaccination had been performed almost exclusively with humanized virus. There were some few exceptions. During the late war of the rebellion large quantities of crusts were supplied to the surgeons of the army for the purposes of vaccinating soldiers, these crusts having been obtained by the process of retrovaccination, *i.e.*, the vaccination of cattle with humanized lymph. This practice had the sanction of the medical department of the United States Army,[1] and was, doubtless, as efficient as any vaccination with crusts. But this mode of propagation failed to win public confidence, doubtless in consequence of a belief in the transmission of human diseases through the cow to man.

I am not aware, however, that any facts have ever been adduced to substantiate such a hypothesis. This process of retrovaccination has also been practised to a considerable extent in other countries, as in Bavaria, from 1818 to 1825, and also in the island of Trinidad.[2]

Humanized virus had been the rule from the days of Jenner until the successful propagation of virus from the well-known case of cow-pox which occurred at Beaugency, France, in 1866. The introduction of this practice into America was mainly due to the efforts of Dr. Martin, of Roxbury, Mass., who imported animal virus in 1870, and began the successful propagation of vaccine virus from that time in an uninterrupted series of animals. A new era in the mode of virus production was thus introduced.

In earlier years vaccine virus was obtained very much after the manner in which our ancestors occasionally procured fire for household purposes before the advent of friction matches. Application was often made to some fortunate neighbor, who had carefully preserved his burning coals

[1] *Transactions American Med. Assoc.*, 1872.
[2] *London Lancet*, May 30, 1868, p. 684.

from day to day. So the country physician often drove away to his professional brother's office in a neighboring village, who had also kept alive his stock of virus by arm-to-arm vaccination of infants, or perhaps by means of a bit of crust carefully stowed away in a corner of his office-desk for future use. Gratuitous distribution of virus was a common event at the meetings of district or county medical societies.

Within the past decade the entire process of vaccination and the general supply of virus in the United States have become revolutionized, in consequence of the rapid increase of population, the immigration of hordes of unvaccinated people, the introduction of animal vaccination, and various minor causes, so that what was once a matter of gratuity or accommodation has become a regular traffic, — the physician purchasing his virus directly from the propagator, or from some middle man, usually a druggist, who, to use the technical term, "carries" the article as part of his stock.

It is safe to say that nine-tenths of all the virus employed in the United States at present is obtained in this manner, by purchase, and also that at least as large a proportion is of animal origin.

Hence, in accordance with the usual laws of supply and demand, certain parties, usually physicians, have undertaken to furnish virus in such quantities as may be required, by constant propagation of the same in and through bovine animals purchased or hired for the purpose.

The practice of animal vaccination is reasonable, and is preferable to any other mode. It is also a matter of the highest importance that every safeguard should be afforded, both by legislation and by private practice, to render its performance perfectly safe and efficient.

Reasons for its use: —

1. *The impossibility of obtaining a supply of virus from humanized sources in sufficient quantity and with requisite promptness for use in times of epidemic.*

The populous throngs of our large cities, and the occasional advent of small-pox among them, render the production of large quantities of virus in a short space of time an absolute necessity.

The number of emigrants who arrived in the United States from foreign ports for the year ending June 30, 1879, was one hundred and seventy-seven thousand eight hundred and twenty-six; year ending June 30, 1880, was four hundred and fifty-seven thousand two hundred and fifty-seven; year ending June 30, 1881, was six hundred and sixty-nine thousand three hundred and fifty-four. In a single day in 1881 three steamers sailed from Bremen for the United States, carrying four thousand emigrants. It is safe to estimate that, during the twelve months of 1882, one million people will have crossed the ocean and become inhabitants of the United States. Some of these people, in the earlier months of the present year, came from ports where small-pox was epidemic, and, on their arrival in America, scattered themselves widely

in the large cities of the Union, and throughout the North-western States, in several instances introducing small-pox where they went.

It frequently becomes necessary, therefore, in the advent of small-pox in a crowded metropolis, to vaccinate large numbers at once; and hence Boards of Health issue orders for the purchase of virus sufficient to vaccinate one thousand to one hundred thousand people, as may be required, within a given time, the virus to be delivered fresh within a specified time.

As there are still some adherents of the exclusive use of humanized virus, let them suggest a plan for the vaccination of large numbers of people with such virus. The work which has occasionally been called for in New York, Philadelphia, Chicago, Boston, and other large cities, in recent epidemics, would clearly have been impossible under the old regime. Suppose, for example, a necessity existing for the vaccination of one hundred thousand people in a given time, and healthy children be sought as a source of supply. Nothing short of a whole regiment of infants would satisfy the demand, allowing the charging of one hundred points from each child (a very liberal allowance).

Again, if it were possible to find one thousand children in dispensary practice, or elsewhere, it would not be safe to pronounce even one-half of them a trustworthy source for obtaining virus.

It would also be a perplexing task to find one thousand mothers who would sit down patiently and suffer so large a draft upon the arms and patience of their offspring. The mingled remonstrances of parents and children would suggest a scene worthy the pencil of Hogarth or of Nast.

On the other hand, the virus obtainable from any bovine animal, susceptible to vaccination, is almost unlimited. In my own practice, extending over several hundred animals of various ages, I have often charged from one thousand to two thousand five hundred points from a single animal, and others report larger numbers (four thousand to five thousand, and even higher). I do not know why, under favorable circumstances, and with an abundant crop of vesicles, these figures might not be exceeded. Appliances would be necessary for facilitating the rapid charging of points or quills, and the utilizing of several busy assistants within a specified time; for it must be borne in mind that there is a definite period within which virus should be taken.[1]

2. *The certainty of avoiding inoculation of human diseases.*

The possibility of the transmission of other diseases besides vaccinia, through the inoculation of human vaccine lymph, was for a long time

[1] This period, according to my own experience, is usually between the one hundred and fifty-fifth and one hundred and sixty-fifth hour from the date of insertion of the virus, during which time we may obtain clear vaccine lymph, which shall be safest, most efficient and most reliable for use in vaccination. I use the term *hour* in preference to *day*, as the latter is too indefinite and ambiguous. The term eight-day clock is usually employed to denote a clock which must be wound every *seven* days.

Animals differ a little in their uniformity of maturing vesicles. Some *hurry up* a little, and I have known one or two to delay for two days beyond the usual time.

denied by the medical profession, with but few exceptions. Then came a period of doubt and of hot discussion; but at the present day the evidence of such a possibility is too overwhelming to admit of reasonable denial. The advocates of humanized virus are divided in their opinion upon this subject; but the careful instructions which all enjoin as to the selection of healthy vaccinifers, and also the importance of cleanliness, are only too certain evidence of an unwilling admission of the fact.

In support of the doctrine of inoculability of syphilis, or other diseases, by vaccination, may be quoted the following cases: —

An Italian physician, Dr. Pacchiotti, reports, in the London *Lancet*, (November 16, 1861, page 485) forty-six children inoculated with syphilis by vaccination with virus taken from a syphilitic infant. These cases occurred at Rivalta, in Piedmont, in 1861.

In a work entitled "Doctrines as to Vaccination," by Dr. Parola, are reported thirty-five cases by Tassani, of Milan. (*Lancet*, loc. cit.)

Dr. N. J. Haydon, of Cornwall, reports two children inoculated with syphilis from vaccination. The vaccinifer was inspected, and found to be syphilitic. (*Medical Times and Gazette*, March 29, 1862, p. 316.)

Trousseau reports a case as occurring in the Hotel Dieu in 1861. The chief of the French National Vaccination Service published in 1867 a list of one hundred and sixty cases which had been brought to his notice in one year.

One case was reported from Strasburg, and the physician who performed the vaccination was punished by imprisonment. (*Boston Med. and Surg. Jour.*, Vol. 90, p. 635.)

In a recent French paper fifty-eight soldiers were reported as having been vaccinated with syphilis by means of virus from a single infant in Algeria.

To all these may be added the testimony of Brudenell Carter, of Jonathan Hutchinson, of Dr. De Paul, and many others.

It has been alleged by advocates of humanized virus that there is no danger of syphilitic inoculation if blood is not conveyed together with the lymph or serum. But who is to decide as to the presence or absence of blood, and what is the so-called vaccine lymph itself but a portion of the blood, plus the unknown quantity called virus? Vaccine lymph may be colored in varying degrees, from a deep red down to an almost colorless fluid, in which no trace of blood may be visible to the eye. The trained microscopist may, nevertheless, find blood corpuscles quite abundant. But it is impossible to find a microscopist at one's elbow for immediate service at every vaccination.

The introduction of vaccination with direct bovine virus obviates the whole objection, and also disarms the opponents of vaccination in general of the most potent argument thus far urged by them.

The hypothesis of the *transmission of bovine diseases* has been urged. If this doctrine were tenable, facts would have been adduced in its support; for the vaccinations with bovine virus in the United States alone

within the past ten years may be estimated at not less than three or four millions.

A careful search in the records of vaccination and of anti-vaccination literature fails to reveal a single authentic case of transmission of genuine bovine disease other than vaccinia itself.

3. *Efficiency.*

In regard to the matter of efficiency or potency of bovine virus I am aware that a certain superiority has been claimed for it over humanized virus, and, while I have not observed any preëminence of this sort, I can confidently assert, after an experience of twenty years (ten with humanized and ten with bovine), that the action of bovine virus is at least of equal potency, and also identical in its mode of operation.

The results of observations, recorded in the medical journals during the past year or more, are widely dissimilar. A few observers record a superior efficiency for bovine virus, a greater potency, and a larger per cent. of effective vaccination. A larger number still record an inferior potency, and a smaller ratio of effective vaccinations. In some cases a total failure is recorded. I regret to notice that nearly all of these observations show a total disregard of the essential conditions of scientific observation. All such observations should be conducted under conditions which admit of no possible doubt. On the contrary, one observer reports his virus as purchased from a *reputable* dealer; another from a *reliable* druggist; another observer does not state whether vaccinations were primary or secondary. Scarcely any observer could state the exact age of the virus which he used (a matter of the greatest importance), and in some instances could not confidently affirm that he was using vaccine virus at all, instead of some factitious product.

On the contrary, the testimony of physicians who vaccinate with virus of their own propagation is uniformly that of a high ratio of success, usually from ninety-five to ninety-nine per cent. in primary cases.[1] The reasons are obvious: the propagator of virus knows its source and its age, and hence attains a uniformly high rate of success in vaccination.

THE IMPORTANCE OF A PERFECTLY PURE STANDARD OF ANIMAL VIRUS.

Care is necessary in the selection of animals. They should be healthy and in good condition as to flesh. They should be well fed and clean, and should be housed in dry, clean, airy, and comfortable stables, and should be free from disease of every sort, including cutaneous eruptions.

The age of the animal is a matter of importance. My own preference is in favor of adult cows. In earlier years I made this a matter of experiment, and vaccinated all ages from calves of a week old to adults of a dozen years. From these experiments I concluded that animals of a

[1] Report of Vaccine Department, N. Y. Dispensary, Dr. F. P. Foster, 1875. Propositions in regard to Animal Vaccination by same author, 1877.

gentle disposition, in a good condition of flesh, with a rather thin hide, and from three to six years of age, yield the best results.

The sex is also important. Virus will take as readily in bulls and oxen as in cows, and the vesicle may present as typical an appearance, and, by actual experiment, I find the virus equally efficient. The difficulty lies in the thickness of hide. This quality renders it almost impossible to obtain a sufficient flow of lymph for practical use.

Analogy would lead us to employ females. So far as I can learn, by observation and inquiry, spontaneous cow-pox (if the term be a correct one) occurs only in cows, and usually in those that are giving milk. Of at least twenty cases of natural cow-pox which I have inspected during the past eleven years all occurred in milch cows, and I find this statement confirmed by the observations of intelligent farmers and drovers of cattle. The theory that natural cow-pox is a rare disease has no foundation in fact, and only gives evidence of a neglect of careful observation of the habits of animals. One would suppose, from the extensive use of the term "Beaugency," that such a case is almost unknown in America, a land abounding in cattle, and annually exporting thousands to foreign ports.

ADULTERATIONS, DILUTIONS, AND OTHER FRAUDS.

The immense demand for virus, created by the last two epidemics of small-pox which have befallen this country, has brought with it more or less of the frauds which are liable to all traffic, either in food, drugs, or other similar articles.

It is important, therefore, that adequate protection be provided in the case of vaccine virus, by the use of which so many of our population are protected from loathsome pestilence. Such protection should warrant *purity* above all things else.

Vaccine virus is collected for use and offered for sale in various forms: —

1. Dried lymph, collected and preserved for use upon ivory or bone points, bits of goose-quill, glass, and pieces of silk or thread. The latter are but little used.

The points and quills have been used largely throughout the United States for several years, and are the safest and most convenient form for general use. These points, either of bone or ivory, are of various sizes and patterns; some with sharpened edges, to be used as a lancet for scarification. The quills are cut from goose-feathers, in pieces of an inch or more, the virus being collected on the convex surface. They have the economical advantage of subdivision.

PERIOD OF ACTIVITY.

It is the custom of most virus propagators to limit the warrant of efficiency to twenty days or three weeks, and, considering the vicissitudes of weather, temperature, dampness, etc., to which it is liable in transit, this limit is sufficiently long, though it may become inert in a shorter

time, and also may be found active after six weeks or more. In one case a whole year is reported.

From my own observation, and that of others, it appears that certain modes of dilution and substitution have been practised in the use of vaccine lymph in this form.

a. The substitution of simple blood-serum for vaccine lymph.

This has been alleged, and, if so, I know of no possible mode of detection except by the test of use. As a substance for dilution there could be no possible motive for its use, except that of increasing the quantity of apparent lymph. The microscope could hardly be relied upon as a detective in this case.

b. Egg-albumen.

During the past winter the medical journals of this country have occasionally contained statements referring to the use of egg-albumen to a greater or less extent in the preparation of animal virus, and specimens of points have been shown me purporting to be prepared in this manner. One propagator has admitted their use, and defended it for certain reasons, namely, that the ivory or bone point is somewhat porous, and hence requires a coating of albumen to prevent the vaccine lymph from being absorbed by the material of the point. Another, that the albumen is applied over the vaccine lymph as a protective agent to render it more durable. Without the least intention to impute the design of fraud to this special use of a foreign substance, I still believe it to be highly objectionable. My own experience shows that the practice is unnecessary for either of the reasons alleged. Pure vaccine lymph will retain its activity sufficiently long without such protection, and, if any lymph is absorbed by ivory or bone, there is certainly a sufficient quantity left upon the surface for practical use.

Again, the addition of such foreign substance would greatly deceive the purchaser, who would naturally suppose the liberal coating to be pure vaccine lymph, instead of a dilute solution of the same in egg-albumen.

c. Mucilage.

In 1872 a package of quills was brought to my notice, which were very small and pointed, and had upon the pointed ends a very thick coating of a substance which was almost insoluble in cold water, of brittle fracture, and totally inert for vaccination purposes. It had every appearance of mucilage of some sort of gum, and could not have been genuine vaccine lymph. I do not think that adulteration from this source would be difficult of detection, in consequence of the comparative insolubility of the gum.

CRUSTS.

This form of using virus is open to certain grave objections, to which the points and quills are not liable. The points are charged at the period when the lymph is clear and transparent, and free from pus or any foreign material, while the crusts are not removed for use until several

days later. These few days are sufficient for the development of pus, which may often be noticed adhering to the under-surface of crusts as they are detached. In addition to the pus various foreign substances are liable to become incorporated with the crust during the period of its formation.

In a fresh, normal crust, which I removed from a healthy cow, September 29, I detected the following elements, or substances: —

First, epithelium in abundance; second, lymph corpuscles; third, pus globules; fourth, fat globules; fifth, hairs; sixth, connective tissue; seventh, starch granules; eighth, fragments of organic material (dust of stables, etc.).

A paper written by Prof. C. A. Lindsley, of Yale College, and published by the State Board of Health of Connecticut[1] last winter, confirms my own examinations. The diagram therein given represents a microscopic portion of a cone, being a certain form of manufactured virus largely sold for vaccination purposes, and composed of crusts. The same illustration will answer equally well for any animal crust, since an examination of any crust taken from a cow at the usual period of removal will invariably present a very similar appearance.

We find, therefore, a variety of elements entering into the composition of a vaccine crust which are extraneous to it, and all of them foreign to the special purpose of vaccination. Some of the constituents which have been proved must naturally be liable to interfere with the action of the virus, and be productive of serious results. This statement is confirmed by the experience of several observers.

Dr. Wheeler, of Chelsea, Mass., reported a death from vaccination with a crust, and had also seen other cases of trouble following their use. He thinks vaccination with the crust more dangerous than with lymph.[2]

Dr. Ayer, of Boston, reported that all the cases of trouble from vaccination, which he had ever seen, followed the use of crusts.

The late Dr. Comstock, of Middleboro', Mass., in a private letter to me in 1872, also related several cases of serious illness following vaccination with crusts.

I need scarcely refer to the use of crusts preserved in an aqueous solution. The very suggestion is revolting to any one who has the slightest knowledge of the laws of decomposition; and yet instances are on record of the use of such solutions, with disastrous results ensuing.[3]

From the various records of analyses of crusts made by others, and also from my own examinations of their intimate structure, and also from the results which occasionally follow their use, I have recently arrived at

[1] *Report of the Secretary of State Board of Health*, Hartford, Conn., 1882.

[2] *Boston Med. & Surg. Journal*, vol. 88, pp. 547, 548.

[3] *Boston Med. & Surg. Journal*, vol. 62, pp. 333, 391. Cases occurring at Westford, Mass., in 1860. The crusts were put into a vial, which was then filled with snow-water. Some of the cases were vaccinated with the putrid contents of the vial after it had been carried in the pocket several days. Result, several serious cases of illness and three deaths.

the conclusion that the use of vaccine crusts, and also all compounds manufactured from them, — powders, solutions, etc., — should be abandoned in toto, and the use of vaccine lymph limited to that which is collected at the period of maturity of the vesicle, and immediately in its fresh, or fluid condition, or dried immediately for subsequent use.

CAPILLARY TUBES.

These are fine glass tubes, into which vaccine lymph is first drawn by capillary attraction, and the tubes are then sealed air-tight at each end. Glycerine is occasionally used for diluting the lymph, in varying proportions. Capillary tubes are used more generally in foreign countries than in the United States.

This form of using vaccine lymph is open to the grave objection, which is common to most organic fluids, of putrefactive change. Bacteria may be found in the lymph contained in carefully sealed capillary tubes in a very few hours after they are filled. Glycerine may possibly delay the change for a longer time, but will not prevent ultimate decomposition. In order to sterilize such a fluid by means of heat it would be necessary to heat the fluid to such a degree as would also be fatal to the efficiency of the virus. The only safe mode of avoiding decomposition would be to collect the lymph under antiseptic spray, immediately after the puncture of the vesicle.

One writer, in advocating the use of capillary tubes, prefers them because "the lymph is always in a fresh state."[1]

If by "fresh" he means free from organic change, the microscope certainly does not confirm the statement.

In conclusion, I would urge the necessity of the highest standard of purity in the preparation of an article of such vital importance to the health of the republic, not only that the objections of the opponents of vaccination may be forever silenced, but also that the possibility of unfortunate results may be prevented, and the perfection of purity and excellence insured.

[1] *Boston Med. & Surg. Journal*, vol. 85, p. 381.

XV.

PROPOSITIONS CONCERNING VACCINATION.

By JAMES F. HIBBARD, M.D.,
Richmond, Ind.

So many facts and so much argument touching every possible phase of vaccination as a prophylactic against small-pox have been presented in books, in magazines, in journals, in addresses, and in conversations, that if it were not a labor of supererogation it would be a work of weariness to undertake to even epitomize them at this time, and to this audience; and, therefore, I feel that I shall most acceptably accomplish my present aim by submitting to this congregation of sanitarians an enumerated series of propositions that seem to me to be established by these many facts, and this much argument.

Such propositions are the following: —

1. Perfect vaccination is a positive protection against small-pox, *i.e.*, vaccinia of a typical development is as much a safeguard against variola as is a primary attack of variola against a secondary attack of the same.

2. Taking vaccination as ordinarily accomplished, an unknown but large percentage of the vaccinees will be liable to an attack of true or modified small-pox at some future time.

3. The number of persons who have had vaccinia that will be liable to small-pox increases with the lapse of time after the date of vaccination.

4. Neither our observation of the progress and termination of vaccinia in an individual, nor our subsequent examination of his cicatrix, will enable us to say whether or not such individual is liable to small-pox.

5. The only practical and reliable evidence we can have that an individual who has had vaccinia is not liable to small-pox is the failure of revaccination.

6. When vaccinia cannot be induced by vaccination, variola cannot be induced by inoculation.

7. A failure of primary or multary vaccination is evidence that such person is not impressible by small-pox contagium at that moment, but is not trustworthy testimony that such person will not contract either vaccinia or variola at some future time.

8. In order to obtain and maintain the completest protection that vaccinia can afford, revaccination should be repeated, say every five years.

9. Revaccination may induce vaccinia, or it may induce vaccinoid; and whenever vaccination, primary or multary, is followed by vaccinia,

the vaccinee was liable to variola; and whenever such vaccination is followed by vaccinoid, the vaccinee was liable to varioloid.

10. Active, unadulterated vaccine virus, bovine or humanized, will induce nothing but vaccinia in healthy individuals.

11. The nature and extent of the pathological changes that may ensue from the insertion of true vaccine virus depends upon the condition of the vaccinee.

12. Where disorders not belonging to vaccinia are induced by the insertion of true vaccine virus, it is always because of a morbid condition of the vaccinee.

13. Vaccine virus, originally pure, may undergo such change in time as to be either, 1st, inert; or, 2d, poisonous.

14. Some latitude in the length of the period of incubation of vaccinia, and some irregularity in the development of its symptoms, are not incompatible with, and should not be held to invalidate, its protective virtue.

15. It is not certain that typical vaccinia, the product of bovine virus, is a better preventive of small-pox than typical vaccinia, the product of humanized virus.

16. All things considered, bovine virus is less likely to be contaminated than humanized virus.

17. It is the duty of the medical profession to cultivate a higher regard among the people for bovine virus and to discourage the use of humanized virus.

18. A physician's confidence of the purity of bovine virus must rest on his faith in the knowledge, the skill, and the integrity of the party who cultivates it.

19. While fully recognizing the desirability of universal vaccination, it is obvious that it can be accomplished at this time among the people of the United States, neither by persuasion nor compulsion.

20. An attempt at compulsory vaccination will not only fail of success in the existing state of public opinion, but will seriously retard the growth of faith among the populace that universal vaccination is a reasonable service.

XVI.

OBSERVATIONS ON TEXAS CATTLE. AGE, WEIGHT, TEMPERATURE, LIVER, AND SPLEEN.

By JOSEPH R. SMITH, A.M., M.B.,
Surgeon U.S. Army.

During the past year observations of cattle have been continued in various parts of Texas. No cattle epidemics have been reported in the State, and the native cattle ranging on their pasture have shown an almost complete immunity from disease.

In a few instances the experience heretofore reported with imported cattle has been repeated, — that is to say, fine stock introduced from the North has suffered great sickness and mortality, and this irrespective of their intermixture with the native cattle.

This sickness and mortality I believe to be due to a process of acclimation. No proof has been adduced that it is due to other cause.

Post-mortem observations have been directed mainly to determining the weight of the liver and spleen, relative to each other, and to the age and size of the animals.

Observations have also been directed to the determination of temperature. It has been found so difficult to introduce the thermometer into the rectum or vagina of living animals, and so many thermometers were broken in the first efforts, that this mode of observation was abandoned, and observations were generally made on recently killed animals, by introducing the bulb of the thermometer into the blood of the large vessels immediately after death. In a few cases the bulb was thrust into the vagina or rectum before death.

The first table gives the weight of the liver and spleen at different ages.

Table I.

Age.	Average Weight of Liver.	Average Weight of Spleen.
	Lbs. Oz.	*Lbs. Oz.*
1 year	8 10.41	1 7.9
2 years	9 3.44	2 1.17
3 "	9 0.32	2 3.13
4 "	9 13.19	2 4.04
5 "	8 12.42	2 3.72
6 "	9 4.66	2 5.66
7 "	8 15.8	2 4.65
8 "	10 6.66	2 8.46
9 "	11 4.	2 10.2
10 "	9 1.	2 2.87
11 "	9	2
13 "	7 14.	1 8.5

The second table shows the weight of liver and spleen in relation to weight of animals of different sizes.

Table II.

Net Weight of Animal.	Number of Animals.	Average Weight of Liver.	Average Weight of Spleen.
		Lbs. Oz.	*Lbs. Oz.*
125 to 149 lbs.	1	4 8	1 8
150 to 174 "	3	5 8	1 2.7
175 to 199 "	7	6 4.29	1 5.14
200 to 224 "	20	6 10.8	1 8
225 to 249 "	19	6 13.7	1 10.8
250 to 274 "	26	7 6.58	1 14.35
275 to 299 "	28	8 1.39	1 7.96
300 to 324 "	65	8 7.2	1 10.71
325 to 349 "	29	8 6.31	2 0.31
350 to 374 "	57	9 2.05	2 0.95
375 to 399 "	42	9 6.48	2 5.14
400 to 424 "	79	9 3.46	2 2.58
425 to 449 "	25	9 14.6	2 5.92
450 to 474 "	42	10 2.97	2 4.69
475 to 499 "	18	9 9	2 5.16
500 to 524 "	30	10 13.87	2 11.70
525 to 549 "	6	11 11.33	2 12.66
550 to 574 "	6	11 4	2 11.2
575 to 599 "	9	11 11.77	3 0.66
600 to 624 "	6	11 14.66	3 6.66
625 to 649 "	6	11 12.66	3 12.66
650 to 674 "	2	12 12	3 7
675 to 699 "	5	13 11.6	3 3.4
725 to 749 "	1	24	4

The third table shows the weight of the spleen relative to the weight of the liver.

Table III.

In Cattle where Liver weighed—	Number of Animals.	Average Weight of Spleen was—
		Lbs. Oz.
2 to 3 lbs.	1	1 8
4 " 5 "	6	1 1.83
5 " 6 "	21	1 5.05
6 " 7 "	49	1 11.22
7 " 8 "	68	1 14.59
8 " 9 "	110	1 15.84
9 " 10 "	102	2 2.25
10 " 11 "	87	2 7.21
11 " 12 "	54	2 6.72
12 " 13 "	28	2 10.79
13 " 14 "	24	2 15.33
Above 14 "	17	3 3.18

The 4th table gives the average age and the average net weight of animals killed at different places, and the average weight of their livers and spleen.

Table IV.

Place.	Average Age.	Average net Weight.	Average Weight of Livers.	Average Weight of Spleens.
			Lbs. Oz.	*Lbs. Oz.*
Ringgold	6+	388	7 11.62	1 11.12
Clarsk	3+	423	10 9.73	2 7.48
Quitman	3+	280	9 6	1 8.
McHaven	3+	385	10 5.92	2 0.44
Pella Colorado	1+	301	8 12.54	1 4.41
McIntosh	5+	440	8 10.75	2 7.76
Presidio	3+	247	6 2.06	1 4.23
In all State	3 to 4	394	9 7.43	2 2.3

The 5th table shows the maximum, the minimum, and the average of temperature observations.

Table V.

Observer.	Maximum Temperature.	Minimum Temperature.	Average of Observations.
Dr. W. E. Waters	106.	101.6	102.33
Dr. F. C. Ainsworth	103.2	100.8	102.17
Dr. B. F. Kingsley	104.9	100.	101.44
Dr. J. A. Wolf	102.5	101.	101.45
Dr. W. Myers	103.6	101.	102.10
Dr. J. R. Harmer	103.	100.2	101.3
By all observers	106.	100.	102.17

Table VI. gives the proportionate weight of the liver and spleen to the weight of the animal, and to the weight of each other, at different ages.

Table VI.

Age of Animals.	Proportion of Liver to whole Body.	Proportion of Spleen to whole Body.	Proportion of Spleen to Liver.
1–2	1/34	1/197	192/1000
2–3	1/35	1/151	225/1000
3–4	1/40	1/164	243/1000
4–5	1/43	1/180	239/1000
5–6	1/48	1/187	254/1000
6–7	1/48	1/189	253/1000
7–8	1/51	1/199	255/1000
8–9	1/45	1/184	243/1000
9–10	1/50	1/210	258/1000
10–11	1/51	1/211	240/1000
11–12	1/50	1/225	222/1000
13–14	1/51	1/261	254/1000

Table VII. gives the proportionate weight of the liver and the spleen to the weight of the animal, and to the weight of each other, in animals of different weights.

Table VII.

Weight between—	Per cent. of Liver Weight to Weight of Animal.	Per cent. of Spleen Weight to Weight of Animal.	Per cent. of Spleen Weight to Liver Weight.
125 and 140 lbs.	3.26	1.154	33.33
150 " 174 "	3.37	0.719	27.27
175 " 199 "	3.34	0.706	21.08
200 " 224 "	3.13	0.706	22.55
225 " 249 "	2.88	9.705	24.43
250 " 274 "	2.83	0.726	25.59
275 " 299 "	2.81	0.521	18.52
300 " 324 "	2.38	0.534	22.49
325 " 349 "	2.49	0.598	24.18
350 " 374 "	2.52	0.568	22.56
375 " 399 "	2.43	0.599	24.68
400 " 424 "	2.23	0.524	23.45
425 " 449 "	2.26	0.542	23.91
450 " 474 "	2.20	0.496	22.51
475 " 499 "	1.91	0.476	23.71
500 " 524 "	2.12	0.550	25.
525 " 549 "	2.18	0.519	23.01
550 " 574 "	2.	0.480	23.89
575 " 599 "	2.	0.518	25.92
600 " 624 "	1.95	0.558	28.67
625 " 649 "	1.85	0.595	32.16
650 " 674 "	1.93	0.519	26.96
675 " 699 "	1.99	0.467	23.41
725 " 749 "	3.25	0.542	16.67

Before proceeding to analyze and comment upon the foregoing tables, it is well to say, that they do not all embrace exactly the same number of observations, and this for the reason that many observations are incomplete.

Thus five hundred and thirty-two only give, in a connected history, the age, the net weight, the weight of the liver, and the weight of the spleen; and this number, at least, is therefore included in every table, save that of temperatures.

Many observations omit the weight of the animal; many its age; some

the weight of the liver; some the weight of the spleen; and some omit more than one of the desired data.

In some are given the weight of a number of spleens, livers, and animals, observed during the month; but the figures thus given in mass cannot be distinguished for each animal, and, on subsequent inquiry being made, the observer was unable to isolate and distinguish the facts relating to each animal.

Temperature observations were made in but one hundred and fifty instances.

Whenever incomplete observations were reported, such facts as were reported were used whenever pertinent. Thus the weight of every spleen reported is used for determining the average weight of all spleens observed, etc.

As regards the age of the animal, it is given in years and not in months, which latter it was found, except in a few instances, impossible to ascertain; so that an animal was quoted as aged one year until it was two; as five until it was six, etc.

Of course the greater the number of observations, the more reliable are the deductions therefrom, and I much regret not being able to furnish a greater number.

But, besides the deficiencies above enumerated, I have been compelled to throw out a few observations presenting unmistakable internal evidence of unreliability.

The character of the observer, and the general signs of personal attention and care recognizable in the original reports of all the observations herein embraced, would seem to entitle them to the utmost credit, and such credit must be given to these tables and their deductions, as are due to observations in no case less than five hundred and thirty-two, and ranging from that to nine hundred.

LIVER.

The average weight of the liver, as observed during the year, was nearly two lbs. greater than the weight reported the previous year, — the maximum weight reported being twenty-four lbs., and the minimum two and one-half lbs.

The liver weighing twenty-four lbs., reported by Dr. Harmer from Fort Clark, was taken from a beef aged eight years, weighing seven hundred and thirty-eight lbs., with a spleen weighing four lbs.

The liver weighing two and one-half lbs. is reported from Fort Ringgold, by Dr. B. D. Taylor, from a beef whose age was not reported, but which weighed two hundred and fifty lbs., and whose spleen weighed one and one-half lbs. No appearances indicating disease in either of these cases are mentioned by the observers.

The absolute weight of the liver does not seem to increase regularly with the age of the animal.

The figures of Table II. show that the weight of the liver of animals between one and two years of age was less than that of older animals;

but the average liver weight of animals aged five to six, exceeded the liver weight of animals aged one to two by two ounces only; and the liver weight of animals aged seven to eight exceeded that of animals aged one to two by five ounces.

The weight of the liver at five years of age was exceeded by the weight of livers at two, three, and four years of age; and the liver weight of animals aged seven was less than the weight at any less age, save one and five.

On comparing the weight of the liver with the weight of the body the relation seems to be, however, more definite, — the weight of the liver increasing with the weight of the body.

An examination of Table II., in which the cattle are averaged in groups differing twenty-five lbs. in weight, shows scarcely an exception to the above-mentioned rule; and the few irregularities in the series would probably become regular with more extended observation.

The liver, however, does not increase in the same proportion that the whole body does.

This appears plainly in Table VII. Here it is shown, that, while in animals weighing less than two hundred lbs. the liver constitutes a little more than three per cent. of the body, the percentage steadily decreases with increased weight of body, until, in animals weighing six hundred lbs. and upwards, the liver constitutes less than two per cent. of the body.

It is well known that the liver of the human body follows a similar rule: the liver of the human fœtus at term constitutes more than three per cent. of the whole child, the percentage in early fœtal life being much greater; while in adults the liver weight is rather more than two per cent. of the body weight.

Table VI. shows a similar state of things as to age.

The livers in animals aged from one to two formed one thirty-fourth of the whole body, and this proportion decreased with considerable regularity, until from nine years upward it constituted but about one-fiftieth of the whole body.

In other words, it appears that the hepatic functions in youth and light weights require a greater proportionate amount of liver for their performance than is required in old age and heavy animals.

SPLEEN.

The average weight of spleens, from this year's observations, is almost exactly two ounces greater than the average obtained by the observations of last year. The maximum was four pounds eight ounces, and the minimum thirteen ounces.

The spleen weighing thirteen ounces was observed by Dr. Taylor, at Fort Ringgold, in a beef weighing three hundred and forty pounds, whose liver weighed four pounds, and whose age is not given.

The spleen weighing four and a half pounds was observed at Fort

Clark, by Dr. Harmer, in a beef weighing five hundred and twelve pounds, four years old, with a liver weighing fifteen pounds.

Examination of Table II. shows that the spleen, like the liver, increases with the years of the animal, in general.

The animals aged ten, eleven, and thirteen, herein reported, numbered but ten in all, and form an exception to this rule. A greater number of observations might conform, or not, to these figures.

It is possible that the spleen of old age is absolutely smaller than the spleen of maturity.

In these instances the youngest animals possessed the smallest spleens, and the oldest animals the next smallest.

Table II. shows also that the spleen increases, as does the weight of the animal, with a good deal of regularity.

Of the lightest in weight but one was killed, and it presented a rather exceptionally large spleen; and the number of the heaviest animals killed was also very few, so that a more extended number of observations would probably show a quite regular increase of spleen weight with body weight.

Anatomists say that the human spleen decreases absolutely and relatively to the weight of the body in advanced years; equalling one three hundred and fiftieth of the body in infancy, and but one seven hundredth in old age.

Tables II. and III. show an absolute increase, not decrease, of the bovine spleen with years and weight; but Table VI. shows a relative decrease with years, with one marked exception, viz., the weight between two and three years is relatively to the weight of the body greater than the weight between one and two.

And here the observations were too numerous to allow the result to be attributed to their insufficiency.

The number embraced in the table between one and two years of age was fifty-one; between two and three, one hundred; between three and four, ninety-three; and so on. And it thus appears from the table that while the liver decreased relatively to the body with every additional year named, the spleen increased up to the age of two to three, and then decreased relatively.

Table VII. shows that the percentage of spleen weight relatively to the body weight steadily diminishes with increased weight of the animal, from about 0.7 per cent. in animals weighing one hundred and fifty pounds, to about 0.5 per cent. in animals of seven hundred pounds weight.

Table III. is calculated to show the relative weight of spleen and liver. In it all livers are classified according to weight, — those from two to three pounds in the first class; four to five pounds in the second class (no livers being found between three and four pounds); five to six, and so on; and the spleens of the corresponding animals averaged.

With increased weight of liver is found increased weight of spleen in nearly every instance. The exceptions were in the animals whose liver weighed between two and three pounds and eleven and twelve pounds.

In reference to the first there was but one animal whose liver was below three pounds. Its spleen was large, probably exceptionally so.

In the animals whose liver weighed between eleven and twelve pounds the spleen weighed less than the spleen of animals whose liver weighed between ten and eleven pounds. There were eighty-seven animals whose liver weighed between ten and eleven pounds, and fifty-four whose liver weighed between eleven and twelve.

Table VI. shows the proportion of spleen to liver at different ages, and Table VII. the proportion of the same in animals of different weights.

The inference from the figures in Tables III., VI., and VII., is that the weight of the spleen generally increases and decreases, as does the weight of the liver, in a direct, and not an inverse ratio.

Only one liver was found weighing less than three pounds, in the same animal, the spleen weighing one and a half pounds.

But, from this on, each increase of one pound in the weight of the liver group, up to fifteen pounds, showed a corresponding increase in the weight of the spleen. Eight animals only were found with livers weighing more than fifteen pounds.

The human spleen is found to weigh about one-eighth of the human liver. The bovine spleen is here found to weigh nearly one-quarter of the bovine liver (between twenty-three and twenty-four per cent.).

Table IV. gives the average age and weight of all animals killed, and the average weights of their liver and spleen; and also the same figures for each point or locality where the facts were recorded.

AGE.

The ages of the cattle killed did not vary materially from the ages reported last year, the following being the principal difference: —

A greater proportion of animals under two years of age were killed this year than last.

Nearly two-thirds of all animals killed were aged between two and five years, and fully eighty per cent. between two and seven.

At different ports the age of cattle killed varied a good deal.

At Fort Ringgold the average age was between six and seven, and at Fort McIntosh between five and six; while at Peña, Colorado, nearly every animal killed was between one and two. The oldest animal killed for beef was between thirteen and fourteen.

WEIGHT.

The average weight of cattle killed was three hundred and ninety-four pounds, and at different places differed greatly, the average being two hundred and forty-seven at Presidio, and four hundred and forty at McIntosh.

The lightest animal killed weighed one hundred and thirty pounds; and the heaviest, seven hundred and thirty-eight.

The increase of weight of cattle was greatest before five years of age.

The average weight of animals between one and two years of age was two hundred and ninety-three pounds.

During the next year the gain was thirty pounds, making the average weight three hundred and twenty-three pounds, between two and three.

Thirty-six pounds were gained in the next year, and the average weight between three and four years of age was three hundred and fifty-nine pounds.

Between four and five the average reached four hundred and twenty-three, being an increase of sixty-four pounds.

Between five and six the average weight was four hundred and seventeen pounds; between six and seven, four hundred and forty-six pounds; between seven and eight, four hundred and fifty-five pounds; between eight and nine, four hundred and sixty-five pounds; between nine and ten, five hundred and sixty-one pounds; between ten and eleven, four hundred and fifty-nine pounds; between eleven and twelve, four hundred and fifty pounds; and between thirteen and fourteen, four hundred pounds.

Thus, the weight seems to have reached a maximum between nine and ten years of age, and thence sensibly diminished as years advanced.

LIVER WEIGHT.

The weight of the liver at different places differed, from an average of six pounds 2.06 ounces, at Presidio, to an average of ten pounds 9.73 ounces, at Fort Clark.

The average liver, from all observations during the year, weighed nine pounds, 7.43 ounces or nearly two pounds more than the average weight of livers from animals killed the previous year.

SPLEEN WEIGHT.

The spleen varied from an average weight of one pound 4.23 ounces, at Presidio, to two pounds 7.96 ounces, at McIntosh.

The average spleen weighed two pounds 2.3 ounces.

The average weight of spleens embraced in my former report was almost exactly two pounds.

As I before stated, the numbers from which these averages are calculated are not the same.

Thus, as an example, the ages of the animals killed are given for more than three hundred observations in which the weight of the body fails to appear. The least number of observations, however, forming the basis of any table, was, as before stated, more than five hundred.

TEMPERATURE.

One hundred and fifty observations were taken for temperature, giving an average of 102°.17, with a maximum of 106°, and a minimum of 100°.

This average is about half a degree less than the average from the observations of the previous year.

Concerning the maximum reported of 106°, Dr. Waters, who observed

it, says, "In this case the animal was very wild and strong, and he was struck with an axe several times, which greatly enraged and excited him, and will account for the high temperature."

In the seven cases from Del Rio, observed by Dr. Harmer, the bulb of the thermometer was introduced into the rectum just before death. These observations give a slightly lower temperature than those taken at any other point.

Dr. Myers, at Fort Clark, who prosecuted this study with great zeal and intelligence, in eight cattle took two observations of temperature, in rectum or vagina before death, and cerebral or carotid arteries after death.

In these eight cases the temperature in the cavity before death averaged 101°.15, and in the blood, a few minutes afterwards, the temperature averaged 101°.52; and in each case and every experiment the thermometer ranged higher after death in the blood than it did before death in the rectum or vagina.

The significance of the foregoing is doubtful. It is not reported how long the thermometer bulb was retained in rectum or vagina, and from the difficulty of introducing and retaining it there, owing to the struggles of the animal, etc., it seems probable that it was exposed to the animal temperature less time in these cases than when immersed in the blood, where there was no haste.

The relative effect, too, on the temperature of the animal's struggles against personal violence and restraint; of the exercise and running, sometimes preliminary to slaughter, and of death itself, are all unsettled questions.

In my former report are contained forty-five observations of temperature, averaging 102°.59.

Thus, one hundred and ninety-five observations in all of temperature were made.

RESUMÉ.

The majority of the observations made during the period embraced in this report have been precise and definite, — much more so than the majority of observations made during the preceding two years.

By consolidating all observations of former years with those embraced in this report the following figures appear: —

Average reported *Age* of all Animals killed.	*Average* reported *Weight* of all Animals killed.	*Average* reported *Weight* of all *Livers.*		*Average* reported *Weight* of all *Spleens.*		*Average Temperature* of all Cattle observed.
		lbs.	oz.	lbs.	oz.	
Between five and six .	381 lbs.	9	7 4	2	1.4	102.26

During the ensuing year observations will be continued as to the age, weight, and temperature of animals killed, and as to the weight of their livers and spleens.

The observations thus far made show scarcely an appearance that might be termed pathological among the cattle killed for beef.

Further, every observer pronounces the appearance of any case of sickness among the cattle to be in the highest degree exceptional.

Not a single case has been found in Texas, during the year, where an animal apparently healthy has communicated disease to other cattle, and it certainly seems an error to suppose that any danger is incurred by the transportation to northern markets of Texas cattle.

The opinion expressed in my former report is confirmed, that the weight of a spleen normally varies according to age and weight.

Its periodic sanguineous turgescence need not here be taken into consideration. This is a vital phenomenon, and after death the blood-vessels seem to discharge their contents, in all cases, until about the same condition of firmness and flaccidity is attained.

The observations here given fail to give support to the idea that the size of the liver and spleen varies inversely to each other. Their increase and diminution are rather mutual.

Drs. Waters, Ainsworth, Taylor, Harmer, Myers, Wolf, and Kingsley, all of the army, have aided materially in collecting facts for this report during the past year, and often at considerable personal inconvenience.

XVII.

STOCK TRANSPORTATION.

By E. E. HOLMAN, M.D.,
Chicago, Ill.

Mr. President and Gentlemen of the Association: — I am very well aware that the subject to which I beg leave to call your attention for a few moments is by no means a new one. However, I am not informed to a certainty whether this august body has ever considered the subject in previous sessions, — an ignorance, on my part, concerning the transactions of this Association in time gone by, if it be thus.

Setting aside the meritorious appeals sent up from kind hearts, whose humane instincts bid them labor in the interest of dumb brutes, the simple magnitude of the traffic in live stock, and the intimate relation which it bears to public health, is a very plausible explanation for presenting the subject for your consideration. When, in the city of Chicago, thirty thousand cattle and one hundred thousand hogs arrive each week; and when the foreign shipment of cattle alone amounts in value to $35,000,000 annually, as conservators of public health is it not wise that we should look into this matter of stock transportation, that we may determine just how far in this direction our sanitary investigation should reach?

First, then, let us consider the cruelty to which the vast majority of animals are subjected before, during, and after shipment. It is an authenticated fact, and comes from no less authority than Edwin Lee Brown, Esq., that, in addition to keeping cattle without food or water for several days, in many instances cattle are salted, — given all the salt they will eat, — and then, without any water at all, put on board the cars for a thirty-six or forty hours' trip. One of the worst features of this barbarous treatment lies in the fact that these cattle are not given any water until they have been at least ten or twelve hours at their destination, after going one hundred hours without food or water, and then, while in this famished condition, are allowed to drink until they are completely sickened. This process, of course, is gone through per orders of the shipper, who hopes to regain by the free use of water what he has lost by unmerciful treatment of the stock while *en route*.

Another specimen of cruelty consists in crowding the car full of cattle, and then putting sheep or hogs between their legs, in order to use all the available space. Imagine a car-load of frenzied cattle, — frenzied from lack of food and water, from wounds made by a sharpened steel thrust

into the quivering flesh an inch or more; blind from the use of this same relic of barbarism; tails broken, and, in some instances, twisted off entirely, — and then obliged to stand up during a long and tiresome journey.

Gentlemen, if you think this is too highly colored, go and find out the truth for yourselves. I would like to have your hear the piteous moans of suffering cattle, see their wounds, and note the wild expression of their eyes, if you would have your hearts touched to sympathy for these dumb brutes.

Cattle and hogs are often left in pens, where the mud is nearly a foot deep, exposed to the hot sun, or storms, for days without food or water. They are often driven twenty-five miles before shipment, and then pounded, jammed, and packed into cars while in this condition.

It is no uncommon thing to see scores of dead hogs at various local stations, which have died from heat or overdriving, and hundreds more that died after being loaded into the cars. Many that do not die while *en route*, with broken backs or limbs, are left upon the platforms to die, or are dragged by the ears or tails and piled one upon another and carted away to the slaughter-houses. The number of dead and crippled animals which arrive at stations run up into the thousands. Indeed, as many as one thousand dead hogs have been taken from a single train, and hundreds more nearly lifeless.

The inquisitive mind very naturally wonders what disposal is made of all these animals.

It is said that in Chicago they are sold for home consumption, while all the stronger animals are shipped east; and this culling process is kept up at all the stock-yards on the way, while the remaining healthy cattle are shipped to Europe. It is claimed that all that have died on the way are converted into soap-grease or fertilizers. If one could feel justified in coming to any such conclusion it would be an item of moment; but at present we are not in proper condition to close our eyes in the face of the veritable fact that they are too often sold for human food. But, setting aside the probability that the animals which have died while *en route* are used for no other purpose than soap-grease or fertilizers, and another feature of the question presents itself, viz., that the bruised, maimed, and crippled animals are positively used for food, which is little, if any, better than using those that have died while on the way.

It requires no philosopher to point out the fact that those animals are diseased and unfit for use. Here is one of the many examples in proof of this: —

"A lot of very fine cattle were shipped from Nebraska, average weight one thousand six hundred and forty pounds, designed for the English market. These cattle were run from the Missouri river to Chicago before they were taken off the cars; they were rested here *three* hours, for the purpose of being fed and watered; they were then run from Chicago to Buffalo, where they were allowed just *two* hours for feed and

water, after which they were run from Buffalo to New York. As these cattle were just ready to be shipped on board a vessel for Liverpool, the agent of the Humane Association, knowing just what kind of treatment the animals had been subjected to, ordered one of the lot to be slaughtered; the order, of course, had to be obeyed. A vessel was prepared to catch the blood from the animal. This was found to be as black as animal blood is ever seen, showing that the whole internal organism of the animal was completely deranged and fevered, — all as a direct result of the treatment these cattle had received. The carcass of this animal was ordered to be hung up and kept twenty-four hours; in the course of twelve hours the meat turned a dark purple, giving full evidence that it was not at all suitable for human food." — *Drover's Journal.*

Are cattle with enlarged glands and malignant ulcers, or foot-rotten sheep, suitable sources from which to obtain nourishment for the sustenance of the human organism? Is the flesh of animals that have been deprived of food and water for days, that have been cruelly beaten, prodded, and driven wild by in human treatment, the kind we wish to have served at our boards? No matter how much we may dislike to admit it, this is exactly the grade of meat we are very often obliged to eat. And this is what we must rely on to help make the brain, bone, and muscle of our nation. There is no surer way to undermine the prosperity of a nation than of undermining the health of its people.

But what effect has diseased meat upon public health? How may it figure as a factor in the ætiology of disease? Is it possible for man to be nourished by food which contains the germs of disease, and yet escape all its evil influences? In other words, is it, or is it not, injurious?

It is claimed that all germs of disease are destroyed in the process of cooking. Very well; we may admit that; but no amount of cooking is adequate to restore unhealthy, disorganized tissues to a normal condition. Cook a piece of bad meat from now until all the doctors in this convention are of "one mind," and it will be bad meat still. If heat or cold will bring diseased tissues back to health, then it might be a wise plan to cook, bake, boil, fry, or *freeze* some of our patients, especially a certain class that are of no earthly account, mentally, morally, or financially, to any one.

Again, is it not quite probable that many diseases with which we have to deal — diseases the origin of which we do not know — may be directly traceable to the use of diseased meat?

In our zeal for the thorough enforcement of all sanitary laws; as we bitterly denounce every surface nuisance, whose existence seems detrimental to the public health; while we watch with jealous care every feature of man's surroundings, and raise our hands in holy horror if, perchance, we find that he has gotten a sniff of sewer gas, or has inhaled a breeze from decayed vegetable or animal matter, we often, very often, forget to ask, "Sir, what do you eat?" Incomparably more important are those hygienic laws which relate to the preservation of the

vital forces — laws relating to man in his own immediate sphere — than on those external, transient influences which may or may not affect him. Certain it is that just so long as the human organism is well nourished, and thus maintains its natural, healthy, positive relation to all external disease-producing agencies, just so long is that organism practically invulnerable to disease. On the other hand, we know that the poorly nourished organism affords a congenial soil for the reception and development of disease. Hence arise the broad features of the great evil arising from the distribution of diseased meat among the people, whereby the vital forces become poorly nourished, if not directly diseased.

To us, then, as sanitarians and conservators of public health, how shall we remedy this gigantic evil? Two ways present themselves to my mind: *First*, By providing humane stock-cars for the transportation of stock, — cars which will allow cattle to lie down, and to be fed[1] and watered while *en route* without unloading. I have been looking into this matter of humane stock-cars, and find that A. C. Mather, of Chicago, has patented a car that works to perfection. I have taken particular pains to inquire into the merits of this car, and, through testimonials from men connected with the stock-yards at New York and Boston, have been pleased to learn that it gives entire satisfaction. Cattle shipped in Mather's Humane Stock-Cars shrink but very little in weight, and arrive at their destination in as good condition as when put aboard the cars. *Second*, By the use of refrigerator-cars, thus doing away with the shipping of live-stock between our great cities. So, by the conjoined efforts of the humane stock-cars and the refrigerator-cars, — the first to gather in and bring the stock to all our large stock-yards and slaughter-houses; the latter to convey the dressed meat to any part of the world in as good shape as when it comes to the hands of the dealer, — in this way the difficulty may be overcome.

But the greatest difficulty will be experienced in trying to educate the consumers up to that point when they will look upon the meat they eat with a good degree of suspicion. When this is accomplished, stock-dealers and railroad companies will see that it is for their interest to make a move in the proper direction.

All things considered, the subject of stock-transportation in its broadest sense is one which concerns the best interest of every human being, because it has to do, either directly or indirectly, with their health; and it is certainly one of the most intricate problems awaiting investigation at the hands of every true sanitarian who has at heart the welfare of the people.

Finally, gentlemen, I hope that when you sit down to your dinners to-

[1] Careful experiments prove that every bullock should have eighteen pounds of hay per day in order to keep up, or make "waste and repair" equal. In shipping cattle in the old style stock-cars a car load of sixteen head of cattle receive only from one hundred to one hundred and fifty pounds of hay *per car* during the whole trip of four days. Mather's cars allow the full amount of hay per head, which is very necessary in order to keep the animals in a healthy condition. — *Holman.*

day, and cast a wishful glance over the many good things placed before you to tickle the palate and coy the stomach,—the savory meats, etc.,—the query will come to each of you that you would very much like to know the *ante-mortem* condition of the animal from which came this smoking steak, or roast, or stew. Again, I hope just such thoughts will trouble you every time you eat, and that you thus will be spurred to exert your every influence against this gigantic evil, until the time shall come when animals designed as food for man shall receive such treatment as becomes civilized nations, such care as is necessary for the preservation of the public health.

XVIII.

LIFE ON WHEELS, ITS SANITARY NEEDS.

By T. P. WILSON, M.D.,
Ann Arbor, Mich.

The ancient dwellers in lacustrine cities must have had some peculiar and interesting sanitary relations. It is not my intention to speculate upon what they were or might have been.

If it were true, however, that any considerable portion of the earth's present inhabitants were to revert to the lacustrine mode of life, the influences affecting their sanitation would form an important study, and would, no doubt, elicit much interest on the part of sanitarians.

We are accustomed, I think, to consider sanitary questions as affecting the human race in two general states or modes of life. We think of people as living either in cities or in the country. It would be difficult, however, to find that much attention had been paid to the latter class; probably on account of the fact that country life shows relatively few unsanitary conditions. Country people, as a rule, get on very well as they are. On the contrary, city life is full of peril, and the mortality there is entirely out of proportion to the relative population. So it is that our sanitary studies have been chiefly into those influences affecting life in cities. But it would seem to me that we have overlooked an important part of our population.

In this country of fifty millions of people we have nearly, perhaps more than, a million, who live exclusively neither in the city nor in the country, but rather in both, and yet belong to neither. If we had a hundred lacustrine cities in this country, each with, say, ten thousand inhabitants, they would be easily recognized by their peculiar dwellings and modes of life. In studying their modes of life they would be found to have conditions essentially differing from our dwellers on the land.

Now, when we look over our teeming population, we can most certainly find a very large part of it living neither on land nor on water.

They live on wheels.

The aggregate of persons travelling on cars, in the United States alone, is astonishingly large. True, the individual persons constantly vary; for, as we see at each station, the tide of humanity is ebbing and flowing; but the total number of persons actually in the cars is not much changed from day to day.

For all practical purposes we may estimate the population of this country living on wheels as a million, or perhaps a million and a half of people.

This much conceded we have but to show the existence of very great sanitary defects in their lives, in order to prove the necessity of a special study of this special mode of life.

That much is gained by shifting the individuals so that each day, or, considering the great length of our railway system, each week, there is a change of persons (and in this not making any account of the employés of the railway) — I say in this change of passengers that much is gained no one will doubt.

Human endurance is taxed often to its utmost by a continuous passage on the cars for ten or twelve hours.

A trip from New York to San Francisco is made quite tolerable by occupying a palace or a Pullman car.

But I am now specially speaking of passengers who enjoy, or, rather, suffer, the ordinary accommodations of a first-class passage.

Be the accommodations good or bad, it is an important fact that this mode of life is in almost all respects essentially different from the ordinary life of the passenger. The transition is sudden, and effect somewhat violent. Noise, dust, and foul air assail us at once and all together. Then we are taken off our feet, and sent swinging and jolting about in a fashion, sometimes pleasant and exhilarating to novices, but always disagreeable to experienced travellers. The experiences of the night are always much worse than those of the day time. I shall not stop to describe them.

The point I insist upon here is, that changing the passengers does not wholly obviate, it only lessens, the result on life of the public.

I need not include in this estimate of the effect of railway life on our mortality list the accidents which occur, and by which so many lives are annually lost. I want, in brief, to consider the effect of ordinary railway travelling upon the lives and health of the people.

It is a common observation to find the effect almost immediately unpleasant and injurious. Some persons are at once attacked with headache, others with nausea, and almost all with constipation, after a single day's ride.

During the summer the cars are hot, and often constantly full of dust. A pitiable sight it is to see a train of cars unload its dust-ladened and tired-out passengers, say just at the close of a long day's ride. These passengers have ridden two hundred or four hundred miles in the very best mode of conveyance extant, and, with few exceptions, have paid for the privilege in good round fare. Have they had a good time? It is enough to say that they are tired and hungry and dirty. They are glad to escape and get home, or get anywhere, even into a hotel.

I shall not at this time enter into detail of all the causes of the discomforts of railway life; last of all will I charge these evils upon those who manage these great corporations. I shall not offer any opinion upon this latter point. I am myself as little affected, perhaps, by railway travelling as any one; but I have kept this matter in view for the past few years, and have seen much of this sort of life in various parts of the country, and have studied and carefully observed its effects. I am con-

vinced that more attention should be given to the hygienic wants of this large class of our people who live on wheels. Since travelling upon the cars has become so necessary a part of our life, we, as sanitarians, should give to it that careful study which will help us to obviate its most objectionable features.

In this work the railway officials will themselves heartily coöperate. It is to them we are indebted for much of the success which has attended the past meetings of the American Public Health Association. When they so generously facilitate our annual gathering we may know that the railroad men of this country have an intelligent appreciation of the value of public health. They have, no doubt, some interest in sewerage and ventilation, and house-building and plumbing; but they may, with justice, ask us why we do not make some suggestions in regard to matters of health within their particular sphere. In the fierce competition for travel among the leading railway lines the law of selection prevails, and the fittest will survive. Each road is anxious, therefore, to make itself most fit for the uses of the passenger.

If it be true, as charged, that there are roads, and important ones too, which are run regardless of the comfort of passengers, and, therefore, imperilling the health and lives of all who travel on such roads, there is no more fitting place to expose such wrongs than the platform of this Association.

If we are the conservators of public health we should not shrink from doing our whole duty.

We have, unfortunately, settled down to a very general belief that railroad travelling is, and always will be, perilous and uncomfortable. But, in spite of this, we have seen great improvements accomplished in the construction of cars and the general management of the roads; but in this respect the good work is only just begun.

Out of the many things which present themselves for discussion I ask attention to these few points only: —

First. Fresh air. The want of this is sometimes so apparent that one is almost impelled to forego the contemplated journey. Fifty or sixty persons in a single car exhaust the air of its oxygen in comparatively a few moments. Besides its loss of oxygen it is loaded with vile odors, coming in part from the uncleanliness, and in part from the diseased states, of the passengers. At night, when the stops are infrequent, this is most to be observed. It amounts to a prohibition against travel on the part of some persons; and it may well be questioned if people should allow themselves to take the risk which breathing this poisonous air involves. Most sleeping-cars are, in this respect, much worse than the ordinary coaches. The lower berths I never saw provided with any means of ventilation, and hence I studiously avoid them.

Secondly. Equable temperature. In the colder weather of our northern climate this is a serious want in railroad travelling. That most admirable systems of heating have been devised and successfully applied is well known to those who have patronized certain lines. That very poor

provisions for heating are often used is equally well known. That cars are often not uniformly heated, nor regularly so, and that no intelligent attempt to have them so heated is made, are facts too well known to need proofs.

Thirdly. The supply of water. I have been at some pains on a variety of roads to examine the condition of the water-tanks. I have followed, with some curiosity, the train-boy or brakeman, when he supplied fresh materials of water, and sometimes ice, and I have examined his utensils until I have long since ceased drinking from the tank in the car.

There is seldom to be found there water fit to be drank. Travelling in company with a distinguished sanitarian, some time since, I found him drinking at that popular fountain. I asked how he dared to do it. "Oh," said he, "I have never thought a word about it." And so, I fear, have many others.

If these imperfect suggestions shall awaken some general interest in the subject, and bring some needed relief to the great population which lives on wheels, I shall have my heart's desire fulfilled.

XIX.

LARGE COMBINED SEWERS DANGEROUS TO PUBLIC HEALTH.

By J. W. COMPTON, M.D.,
Evansville, Ind.

The importance of sewers and drainage will continue to increase as towns and cities spread over additional territory, and populations become more densely crowded in them. The accumulation of sewage and waste will demand increased facilities for their removal with the smallest detriment to life and health, so indispensable to human progress and happiness.

Custom, in the construction of sewers for the drainage of storm-water and their gradual conversion into avenues for the removal of a great variety of filthy products, makes us so familiar with this means of removing waste material that we do not observe the damage until the accumulation of pestilential impurities causes wide-spread disease. At one time the washings of our streets by storm-water may be harmlessly carried off by our sewers; but the increase of manufactures and filth-producing trades, and the habit of permitting improper substances to enter the sewers, so pollute them that they become a net-work of pestilence.

These causes of disease and death have an existence to-day in some places, and it would be a wise and better policy to apply the remedy at once than to be driven to its application by some disastrous pestilence in the future.

It is only necessary to visit the mouths of large sewers, and observe the small amount of liquid sewage they carry off at ordinary times, to create the suspicion that the sewers were constructed with greater regard for the contractor's profits than for the drainage demanded. They are found to be great caverns, in which a man can walk erect, and not carrying liquid sufficient to wet the top of his feet, and much of this sewage composed of materials that should never be permitted to enter a storm-water sewer. I may enumerate water-closet connections, by which the germs of infectious diseases reach the sewer with the excrement of the sick; breweries, tanneries, soap-factories, slaughter-houses, and various other manufacturing and industrial pursuits which tap the sewers for the disposal of their dangerous fermenting and decomposing offal, whereby the sewers become elongated cesspools, reeking with filth and animalcule life and generators of infectious and epidemic diseases. The microscopic organisms, perhaps germs of the class called bacteria, develop on the

inner walls of our brick sewers when there is a combination of heat, moisture, and darkness, and the stimulus of gases arising from decomposing sewage there present. As these combined sewers are used to carry off storm-water besides sewage, and as "the storm water falling per hour in violent rains over an acre of closely built city land is nearly fifty times the amount of waste water and sewage produced per hour on the same area," their usual condition is that of great caves with a mere trickling thread of sewage along their floor. "But as in times of rain they are nearly full of the dilute sewage which results from combination with storm-water, their walls then become coated with a film from which bacteria are often developed, and then the germs of the poisonous organisms float off in the sewer air and are carried into dwellings in that air just as dust is blown in through the windows," — and with it carry disease, suffering, and death to the innocent and unsuspecting inmates.

I suffer to-day and all the time a sorrowful realization of this source of danger. I purchased a dwelling-house so far situated from a sewer that I had no apprehension that the sink in my back-yard connected with the sewer. This connection, however, had existed for a long time, and typhoid fever had been epidemic along the sewer the year before. I am convinced that the poisonous germs of that disease had remained in the sewer and upon its walls, and that these germs were carried out with offensive gases through the sewer connections and invaded my residence. My family were stricken down by this poison, and the death of a promising son embittered my life.

This terrible experience induces me to urge with greater earnestness a radical reform in the construction of sewers.

This reform should consist in the entire abolition of the costly plan of large combined sewers for carrying sewage and storm-water together, and the adoption of the separate system of sewers with proper protection against the escape of foul gases into the residences and into the air we breathe upon our streets.

The main sewer laid in the city of Memphis under the "separate system," in the plan of drainage since the deadly ravages of yellow fever, I understand is only fifteen inches in diameter, and some of its branches have a diameter of only six inches. In order to have a thorough and practical understanding of the size of sewers and the removal of sewage matter produced by a given population, I append hereto extracts from the report of Prof. Geo. E. Waring, Jr., of Newport, R.I., to the National Board of Health, on recent gaugings to determine the size of sewers needed for the greatest amount of sewage produced by the population and area given in the several extracts. Before proceeding to give the measurement of the outflow of several sewers, Prof. Waring, who is a civil engineer of world-wide reputation, makes the following practical remarks: —

1. Sewers large enough for the removal of storm-water are so much too large for domestic sewage that they must inevitably be foul and in a bad sanitary condition, except when flushed by storm-water. As storm-

water is often withheld for many weeks together, and often at a season when the decomposition of deposits in the sewer is most active and injurious, this condition continues a very grave sanitary defect.

2. Aside from the foul air produced in the sewers themselves, the decomposition of the filth which accumulates in the catch-basins, by which street-water is admitted to the sewers, is often a source of most serious offence, if not of danger.

There seems to be good ground for the belief that if the size of sewers can be adjusted to the removal of foul wastes only, not only will their condition be very much improved, but their cost will be so vastly reduced as to bring their advantages within the reach of the smallest communities.

PROVIDENCE, R.I.

Pine-street Sewer. — The total length of this sewer is thirteen hundred and ninety-one feet. Its grade varies from 0.86 per one hundred to 4.18 per one hundred. The district which it drains contains sixty houses, all of which are residences, and forty-one of which are connected with the sewer. The gaugings in this, as in all other cases, were taken at the time of the greatest use of water of the week, in this case on Monday morning, between the hours of eight and eleven. The depth of flow was measured at intervals of fifteen minutes. The population tributary to the sewer, numbers two hundred and sixty-seven. The result showed that the greatest flow of sewage reached a depth of 0.4375 inches in the twelve-inch sewer. In the reducer which brought the current into a channel having a radius of three inches, the greatest depth of flow was 0.875. A pipe 1.84 inches in diameter running full, at the same velocity, would carry the greatest flow of sewage from this population of two hundred and sixty-seven.

BURLINGTON, VT.

College-street Sewer. — The total length of this sewer and its branch is two thousand seven hundred and ninety feet. Its grade varies from 0.435 per one hundred to 3.39 per one hundred. The district which it drains contains eighty-five houses, of which fifty-four are connected with the sewer. Forty-nine of these are dwelling-houses, and five are stores and shops. The population tributary to the sewer embraces three hundred and twenty-five. The gauging was taken at intervals of fifteen minutes, from 7.30 A.M. to 10.30 A.M. The result showed that the greatest flow of sewage reached the depth of 1.2 inches in a pipe of three-inch radius. A pipe of 2.25 inches in diameter, running full at the same velocity, would carry the greatest flow of sewage from this population of three hundred and twenty-five.

MILWAUKEE, WIS.

The gaugings of the Huron-street sewer are of especial significance. This sewer is forty-two inches in diameter. The grade of the sewer at the point where the gaugings were taken was about one in four hundred.

The area tributary to the sewer is about seventy acres, all nearly level, closely built, containing five hundred houses, mostly dwellings, and a total population of four thousand and thirty-five. One hundred and thirty-two of the buildings are not connected with the sewer; the remaining three hundred and sixty-eight buildings contain a total population of three thousand one hundred and seventy-seven, all of whom are tributary to the sewer. There are several hotels, saloons, small factories, and livery stables, so that the district is fairly representative of an average city area. The greatest flow in the main sewer on "washing day" — the greatest flow of the week — attained a depth of six inches, the diameter of the sewer being forty-two inches.

The channel being reduced to a diameter of ten inches, the greatest depth of the flow was 4.5 inches. Reduced to a diameter of eight inches the depth remained the same, — 4.5 inches. Reduced to a diameter of six inches, it reached a depth of 5.5 inches.

POUGHKEEPSIE, N.Y.

Market-street sub-district Sewer. — This is a one-fifth inch vitrified pipe-sewer, draining Church street, Noxon street, and a part of Market street. The total length of the sewer, delivering at the point of gauging, is two thousand seven hundred and sixty-six feet. The number of houses tributary to the sewer was thirty-nine, and the population four hundred and twenty-six. The greatest flow of their sewage, measured in a pipe six inches in diameter, was 2.25 inches. It might all have been carried in a pipe a trifle more than three inches in diameter.

ST. LOUIS, MO.

Compton-avenue Sewer. — This sewer drains an area containing one thousand three hundred and seventy houses, occupied by a population of eight thousand two hundred. The total number of water-taps was one thousand three hundred and ninety-one. The diagrams show gaugings taken every hour from 6 P.M., Monday, March 15, to 11 A.M., March 16; and from 8 A.M., March 19, to 8 A.M., March 23. These gaugings are averaged to make a typical day, in which, beginning at midnight with a flow of 75.32 cubic feet per minute, the flow was reduced to 70.26 cubic feet per minute at 2 A.M.; then it went to 71.87 cubic feet per minute at 6 A.M.; 130.26 cubic feet at 11 A.M.; 123.86 cubic feet per minute at 3 P.M., and steadily declined from this time until midnight, when the flow was 75.15 cubic feet per minute. The sewer is seven feet three inches in diameter. It was obstructed by a dam, into which was built a half-inch vitrified pipe-sewer, which was continued for a length of twenty feet. The gaugings were taken simultaneously at three different points, the average of these being the assumed depth through the twenty feet of half-inch pipe.

The greatest depth reached in this pipe was less than seven inches (.5833 feet). Flowing at the same velocity, the whole stream would have been carried by a sewer a trifle more than nine inches in diameter.

XX.

THE CREMATION OF EXCRETA AND HOUSEHOLD REFUSE.

By J. M. KEATING,
Memphis, Tenn.

The disposal of excreta is the sanitary problem of the age. Whether in towns, villages, or cities, the privy, like the Madden system, is utterly objectionable, from the liability to pollute the soil, water, and air. For the same reasons it is objectionable, even on farms, as the privy, for convenience, is generally located near to the well or cistern.

Dr. S. W. Abbott, of Wakefield, Mass., in a report on typhoid fever in leading and adjoining towns, Massachusetts Report, 1879, says: "One point appears especially prominent in this report, — the dangerous proximity of the well, the privy, and the cesspool . . . the factors of this dangerous triangle do constantly appear, and are continually multiplying, wherever new houses are in process of erection, in country villages, in farming communities, and in the smaller cities without a fresh water supply."

The sewer system is only less objectionable than that of the privy. In seaboard towns or cities sewage may flow into the harbor or the sea; in many, indeed, most instances to be washed back by the currents, forming banks of poisonous silt, or, if discharged into running streams, polluting the water, silting up the bed, and creating a permanent nuisance. Besides, there is the liability to leakage and consequent pollution of the soil, and the escape of sewer gas into the streets and houses, the bedrooms of which are usually connected with the sewers by means of the wash-basin. Out of the difficulties that thus environ our present methods of sanitation there is but one safe way, and that is by fire. The public have no more right to pollute the rivers and streams of the country than an individual to pollute the highways of city or country by littering them with filth. The public has no more right to destroy the fish by poisoning their sources of life than an individual to destroy his neighbor's wheat-field. Fish are the poor man's ever-recurring crop, and the efforts being made by the government to increase the supply and variety should be seconded by the States and by all the municipal and town authorities of the Union. This can only be done by using the existing sewers to drain the storm-water, and furnishing each house, manufactory, or mill with a furnace for the destruction of the excreta and all the house-waste. There is not one of the large cities of the country that can be said to be free from the effects of sewage pollution, through leaky sewers, defective house

connections, and docks and rivers silted up. The Ohio river is almost lined with cities and manufacturing towns, and, in consequence of the cutting down of the forests, it is no longer the navigable stream the early settlers found it. The result is, it is being polluted at a rate that justifies the belief that its waters will ultimately become so tainted as to be unfit for human use, and death to every living thing that survives in it. It ought to be the source of a free fish-food supply for all the people living along its banks. Mississippi, with its rapid current, is more nearly equal to the demands of an increasing population; but a time may come when the cry and protest of the people will go up against its being made the drain and sewer of half the continent. It is even now a question to what extent the natural sources of malaria are strengthened by deposits from great cities like St. Louis. The Board of Health of Nashville, a comparatively young city, the greatest growth of which has taken place within the last generation, in 1866 reported that "the two evils which infest our city, and constitute the most fertile causes of our high rate of mortality, are foul air and filthy water. The water we drink is not only loaded with organic impurities, but is teeming with a microscopic population, which is living, dying, and decaying in it. Brown's creek, 'a sewer of the foulest character,' drains its filthy contents into the Cumberland river above the water works, and with it the 'drainage of all the southern slopes of the city.' And this 'no filtering through sand or gravel can take out of it other organic matters than those in a state of suspension; those in solution still cling to it.'" In 1876 Dr. Madden incorporated the report from which the above is extracted in a paper read before the Board of Health of Nashville.

From Chicago there is constant complaint. The river into which the sewers of that city empty is a nuisance only paralleled by that into which Milwaukee empties its excreta and its wastes. The docks of San Francisco, and those of Baltimore, Philadelphia, New York, and Boston, in the stenches which rise from them at low tide, bear witness to the crying necessity which exists for some other means of disposing of excreta than by sewers. The leading cities of Europe, like St. Petersburg, Paris, Berlin, Vienna, London, Manchester, Liverpool, Glasgow, Edinburgh, Dublin, and Belfast, all tell the same tale of river and harbor pollution, and of the death-dealing stenches, and the fermenting gases that kill. To avoid this London built the Victoria Viaduct; but it does not afford the measure of relief expected. Nothing but fire will. By burning excreta, — house, mill, and factory refuse, — not only will sewer pollution be avoided, but disease germs will be utterly consumed, and thus one of the readiest means for the transmission of epidemic be prevented. The plague was many years ago traced to the canal at Cairo, into which the people used to throw their offal and carrion. The rivers, into which our modern seaboard cities empty their excreta, at low tide sent back the odors which are so many warnings of the malarious poisons which, as was the case in Brooklyn recently, explore and render uninhabitable whole blocks of buildings. Recent reports from the most fashionable watering-places and

summer resorts appeal for radical reform in the removal of excreta. It is the one thing which vitiates the air, saturates the soil, and fills otherwise desirable homes with poison. Recent reports make Newport a very hot-bed of preventable disease, and nearly all the other places by the sea are complained of because the make-drift sewers are defective, and are merely so many ways for conducting back to the houses, in the form of sewer-gas, the excreta which was sent from it in the blind hope that its removal with the aid of water was the last of it. Like many other things it comes back to plague the inventor. Many hands make light work. If every house, mill, and factory, was supplied with a furnace for the cremation of its offal, refuse, and excreta, much of public expense would be saved as well as much of public health and human life. The *Sanitary Engineer*—a publication of great value to sanitarians—recently called attention to the Bronx river, within the limits of New York city, which is polluted and rendered offensive by the refuse from tanneries and gas-works on its banks. There must be some means of preventing this nuisance. The sewage of the growing village of West Farms, which is included in the city, and is on the banks of this stream, is now either not removed at all, or else goes into the stream. The disposal of the sewage of this whole territory will soon become a question of vital importance to the residents. The Bronx cannot receive it without being made a pest-breeder. It ought not to be discharged into Long Island Sound, and be carried back and forth by the tides. There is an opportunity here for a great deal of study by sanitarians. The disposal of the sewage which drains into the Harlem river is of even more moment, and will in a short time become a serious nuisance. The population between Eighth and First avenue is increasing, and the stream is narrow and tortuous at low tide and bordered by mud-flats. Even when these are filled in and the river banks confined by the bulkheads of the proposed improvement, the stream will be nothing but a long and narrow open cesspool rising and falling with the tides. The sewage cannot be carried away by the tide, and must continue in the river until its final decomposition. What, then, is to be done with it? To build a great viaduct across Long Island Sound and across that island itself, and then a tunnel far out into sea, for the discharge of the sewage of New York and the cities adjoining, seems to be the only solution of the problem under present plans. That is, of course, out of the question, even if it was a final solution of the difficulty, which it would not be. Fire will save the Bronx and the Harlem rivers, and the sound, and the ocean, and the people, and fire alone. Rochedale, in England, furnishes partial proof of its efficacy.

So, too, in a measure does the pneumatic-air plan of Liernur, which has proved such a blessing to Holland. But even these systems can be improved upon by a furnace in each house, in which not only the excreta, but all the refuse of houses, mills, and factories, may be cremated. Fire destroys utterly. Water does not always kill. Dr. Joseph Wilson, medical director of the navy, in his excellent treatise on "Drainage for Health," says, "There is an effort to stop cesspools from leaking into

the cisterns; but this is done by emptying the cesspools and sewers into the rivers. We are told that organic matter (stercoral matter) thrown into a river is quickly diluted and oxidized, so that if the water flows a mile or two it becomes sufficiently pure. There are some truth and much fallacy about this statement. The oras and embryos of tapeworms and some other entozoa do perish and decay in the course of time, if cast into the river; but some of them are a long time before they perish; and some, probably, live in this situation long enough to become the parents of millions, and thus to continue indefinitely. Physicians cannot resist the accumulating evidence that typhoid-fever infection is composed of definite organisms, "probably living." Dilution separates the infective germs, so that any particular cup of the water is less likely to contain the deadly portion; but the numerous cases of typhoid fever prove that the poison is still present, and in such condition as to cause disease and death. The deaths from this disease, caused in this manner, in each of the large cities, amounts to several hundred every year." The same writer (Sect. 28) says, "Boston has her Cochituate lake and Pegan brook; and there is no actual need for chemistry to tell us that the brook is dirty. New York has her Croton river and lakes; and there is no need of microscopy to tell us that the hotels, the sanitaria, and the manufactories, discharge dirt into the reservoirs. And Philadelphia has her Schuylkill river and her Fairmount park, where it is only necessary to walk about with the eyes open in order to see that the sewage enters the river at Manayunk. The Delaware likewise receives sewage at Trenton, Bristol, Burlington, and Holmesburg, as well as at Frankford and Kensington. The pollution of rivers is the great difficulty with sewers." "Independent of the contamination of the drinking-water the sewer water often kills fish," says Dr. Parkes, in his great work, "A Manual of Practical Hygiene," "creates a nuisance that is actionable, and silts up the bed of the stream." Referring to Franklin's experiments on the water of the Irwell, which receives the sewage of Manchester, giving Dr. Letheby's statement that sewage may be perfectly oxidized in nine miles, when mixed with twenty times its bulk of water, he says that "oxidation of sewage in running water cannot be depended on for perfect safety." In the Massachusetts Report, 1879, "Suggestions on Sewerage," the statement is made that "the admixture of sewage, which would be held to constitute pollution, cannot be exactly stated; but may be as slight as one part of sewage to one hundred of water." Mr. A. Anthony Nesbit, who has conducted a long series of experiments, in regard to the detention of chloride of lime in water, says that "in small quantities it is rapidly reduced by the action of the organic matter in the water, which fact must not be lost sight of, and every hour's delay in testing it makes it more difficult to indicate pollution. The wastes of mills and factories, as well as those of dwellings, are poison to the rivers and the streams, and excreta is dangerous in the sewer as well as in the privy, and in the river as sewage. In using sewage on farms, — a more or less costly operation, — there is also danger if it is not used as it comes directly from

the sewers. If putrefaction has commenced there is danger from a deadly effluvium. Even poudrette is dangerous, from its liability to ferment and occasion typhoid fever among persons handling it or engaged in the navigation of vessels carrying it as merchandise." The principal objection to Liernur's pneumatic-air plan is that in times of epidemics the pipes would have to be disinfected and washed with water to remove the adhering particles of excreta. Carbonization of sewage in retorts, with or without previous admixture with charcoal in retorts, has been proposed in India, and Mr. Stanford has proposed the addition of sea-weed charcoal and subsequent distillation. These plans are now being tried in England. In Manchester, Leeds, and Birmingham, the excreta collected in pails is reduced to small bulk by drying in an apparatus called a Concreter, the ammonia being fixed by the sulphuric-acid fumes produced by the other processes of heating refuse and rubbish. By this means the contents of the pails are reduced one-twelfth and a valuable manure is obtained, which may be either in the form of poudrette or mixed with a little charcoal; but in either state it requires the utmost care in handling. There is no real safety save by cremation. Yankee ingenuity once directed in this channel will doubtless be equal to the emergency, and provide just the kind of cheap furnace or stove necessary for the purpose. By this means, and this alone, can the ultimate of sanitation be realized.

XXI.

THE SANITARY, PHYSICAL, AND EDUCATIONAL ADVANTAGES OF INTERIOR OPEN AREAS IN LARGE CITIES.

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Large cities are the graves of our population. As a general rule, the chances of life lessen as the population becomes more dense. The mortality is greater in crowded cities, and in the crowded parts of the city, very much in proportion to the crowding. There are dense localities in almost all large cities that are notoriously unhealthy. Thus, Liverpool, with a population twice as dense as that of London, loses two thousand seven hundred and fifty more lives annually, in proportion to her population. It was ascertained, from reliable data in Scotland, a few years ago, "that the mortality in the towns was one-third higher than it was in rural districts; and that, could the mortality of the towns be brought down to that of the 'mainland purely rural districts,' then the average life of the town would be increased about fifteen years."

From the twenty-fifth report of the English Registrar General we learn that Liverpool, with a population of one hundred and seventy-eight thousand to a square mile, had a death-rate of 34.8 in a thousand, and Manchester, with a population of one hundred thousand to a square mile, had a death-rate of 33.7 in a thousand, while the rural districts of England, with a population of five thousand four hundred less to a square mile, had a death-rate of only 16.8 in a thousand.

Thus, we see that the chances of life at that period were twice as good in the rural districts of England as in Liverpool and Manchester. Since the time of this report the mortality of these cities has been greatly reduced.

The death-rate in some sparsely populated districts of our own country is reported fourteen in a thousand; that of Michigan, for 1876, was 13.9 in a thousand.

If we refer to the old cities of Europe we shall find that they have greatly improved their ventilation and reduced their death-rate, during the last half century, by the construction of interior open areas. They have taught us valuable lessons upon this subject.

Formerly these cities were surrounded by high walls of defence, which enclosed a crowded population; the houses were high, the streets narrow and tortuous, more often mere lanes and alleys, with little ventilation.

Disease consequently made fearful ravages among the population. Plague, cholera, and other malignant diseases, destroyed multitudes of people. By and by the walls were levelled and the moats filled in, and the spaces they occupied were left as open areas and converted into parks, public gardens, or boulevards, skirted with trees and other vegetation. Streets were widened, broad avenues were built, the population became more scattered, and the city better ventilated. Then the more fatal diseases disappeared, the mortality greatly diminished, and the people became more vigorous and strong and the cities got to be more prosperous.

The sanitary history of London and Paris strikingly illustrates the disastrous consequences of massing population densely in large cities, and of the important sanitary and material advantages of opening up a crowded population to sunlight, fresh air, and green foliage, by the construction of broad avenues, open squares, parks, and gardens.

Let us look at London. Betwen 1681 and 1690 London had a population of a little over half a million, and a death-rate of forty-two in a thousand. During the next century the death-rate was reduced to thirty-five in a thousand, with a slight increase of its population. During the last century the death-rate was brought down to twenty-three in a thousand. One year, 1872, it was twenty-two in a thousand, with an enormous increase of population to nearly four millions.

Thus we see that the mortality of London has not increased with the growth of the city, but has diminished, *pari passu*, with this increase, and now it is not only the largest, but about the healthiest, city in the world; and yet, says Sir Arthur Helps, "it is a place where nobody except butchers' boys enjoys perfect health, — the full state of health that they are capable of enjoying." It can be confidently asserted that sanitary measures have been mainly instrumental in bringing about the remarkably low death-rate in London, especially the opening up of broad avenues, squares, parks, and gardens, which have been aptly called the "lungs of London." Since 1860 London has spent many millions of pounds sterling in the construction of works to carry the sewage beyond the possibility of its return to the city by the tide, and in bringing pure water into the city. Previous to this period, from the presence of filth, the Thames was in the worst possible condition, emitting a most intolerable odor, infecting the air on both sides of the river, far and near, so that one year Parliament was obliged to adjourn. So muddy was the water that a white body, dropped into it on a bright, sunny day, — an experiment performed by the great scientist Faraday, in 1842, — disappeared on going half an inch below the surface. Yet the drinking-water, more or less imperfectly filtered for a large part of the population was drawn from this great sewer, whose filth was twice daily tossed backwards and forwards by the fluctuations of the tide, and thus made to infect the surrounding atmosphere with its foul odor. After the construction of these costly works some may have supposed that no more deaths would occur in London; and yet the mortality fell off only eleven in a thousand, and it is difficult to determine how much influence these great improvements

may have had in bringing about this desirable change in the mortality, inasmuch as other sanitary improvements were being made during the period of the construction of these works. Previous to these betterments, in spite of the bad condition of the Thames, London had reduced its mortality from forty-two to 24.1 per thousand. Now, what measure has done so much to bring about this desirable result as the improvements in the ventilation of the city, by the construction of interior open areas?

If we look at the sanitary history of Paris we shall find it similar to that of London. The former has always been more crowded and the death-rate higher. The average density is ninety-six persons to one acre, while the old city has as many as three hundred and thirteen to the acre; the latter has an average density of five hundred and fifty-six, while the more crowded parts have one hundred and seventy-four per acre. Formerly the houses of Paris were generally crowded together without order or care as to the length and breadth of the alleys by which they were reached. Thus arranged, the ordinary death-rate was fifty per one thousand, ordinary years. This has been gradually amended, till, during the last ten years, the death-rate has been 23.9 in a thousand. The same sanitary causes have brought this about as in the case of London. Immense improvements have been made in Paris. Stately avenues have been driven through old, thickly populated portions of the city, through massive walls and densely packed houses, thus opening up to the sun, air, and trees, unhealthy parts of the city. Public squares have been made where houses and other old buildings stood. Much of the garden of the Louvre was once crowded with old buildings; even the great square of the Louvre was once packed with alleys. Not many years ago the old city of Paris was a disgrace to its civilization. It contained many streets, alleys, and lanes without ventilation or sunlight; districts where an entire population were languishing and dying. Now, since the new and important works have been carried out, the sun shines everywhere. Streets have been enlarged, and every one has sufficient air to breathe, so that Paris has now few unhealthy alleys. Says a recent writer: "The masses of vegetation which are everywhere distributed amongst the population clean the air by absorbing the miasmatic exhalations, thus enabling every one to breathe freely."

Frankfort-on-the-Main was formerly surrounded by high walls of defence, and, according to Dr. John R. Dix, was "noted for the prevalence of scrofulous diseases and a great number of cripples and rickety persons. These walls were at length razed, and the area they occupied was converted into a broad, open space, nearly encircling the city, laid out as a garden, or used as a public promenade. This open area became very valuable, not only for exercise and recreation, but especially as a ventilation of the city; for, after the lapse of one generation after the removal of the ramparts, the physical characteristics of the population had changed, and the cripples had disappeared."

We are informed by Hon. George H. Snelling, Boston, that the plague uniformly originated in Grand Cairo, and spread thence over the whole

East. A hill of moderate elevation lay in the direction of the prevailing wind at that place. This hill, by recommendation of the medical men of Europe, was levelled. The stagnant air in which the disease originated no longer furnished a nidus for it. Since that time this terrible scourge of the East has scarcely been heard of.

We have all been saddened by the high death-rate in New York city during the past summer. Is not the overcrowding of the population, the want of a proper ventilation of the streets, lanes, or alleys, the great primary cause of it? Children living in the crowded neighborhood of New York never get a full breath; never visit the country or the parks, for they are so far away.

The Central Park Commissioners for the year 1872 tell us that "a majority of those who frequent the park are people in comfortable circumstances; and that to the great body of citizens it is too difficult of access to be of use except on special occasions." Dr. Stephen Smith has suggested the plan of sending children of the poor, two, three, or four times a week, to Central Park, during the hot months. The difficulties of sending the children of the poor of large cities, miles away, to a park, are not likely to be overcome; so they will die in large numbers in the filth and foul air of their own homes, or grow up to feebleness, and to find an early grave from consumption, unless measures are taken to improve the sanitary condition of their own homes. The ventilation of the streets should, if possible, be improved. Open squares should be brought to them, as is done in Paris. Says Dr. S. Smith, "Thousands of children perish every summer for want of pure air, shade, and fresh water."

Is not the high death-rate in New York, during the past summer and every summer, a lamentable evidence of the fatal errors that men committed in the early plans of the city, in neglecting to provide interior open areas, — errors that are now hard to correct? But New York is not the only city that has made these mistakes. Indeed, it would be hard to find one that had not made them. There is Chicago, and many more. Says Sir Arthur Helps, "In providing open spaces for recreation in and near large towns, sundry benevolent persons have already bestirred themselves and have effected much good." "But, if all the benevolent, powerful people were to interest themselves for a whole generation in effecting such objects, too much would not be done to overtake the consequences of former oversight and neglect." It has been truly said the time would soon come when only a limited number of people would be permitted to a square mile.

The ventilation of streets is as important as the ventilation of houses; for of what use is it to let foul air out, unless the streets are so well ventilated that you can let pure air in? Noxious emanations come from sewers, cesspools, house-drains, excreta of every description, streets, lanes, and alleys, animal life and animal and vegetable decomposition, from the surfaces of polluted waters, and from the surfaces laid bare by the ebbing tide of these waters. The nearer we are to these impurities the more obnoxious they are. When most copiously evolved, under the most unfavorable cir-

cumstances, they are quickly diluted by contact of the open air, and their evil effects are less experienced the further they go from the place of origin. The temperature greatly influences their evolution, and the currents of air determine the direction and extent of their influence. They are not only the direct cause of most infectious diseases, but the cause of a multitude of infirmities. They deteriorate the constitution, and create a liability to succumb to disease or accident. The diseases of such persons who inhale them are usually of a debiltiating type, and tend to death rather than recovery. Their recuperative powers are inefficient. Foul odors are signals of danger. They not only injure the people in the streets, but enter our dwellings, visiting alike the sick and the well, diminishing the chances of recovery to the former, and impairing the health and strength of the latter.

We want interior open areas in large cities as pleasant, healthful, convenient resorts for the people: for the tired workman after his day's work is done, and for his wife and children, to which they can escape from the noxious environment of their home; for the sick, the infirm, and the aged; for the child wizzened from cholera infantum, paralyzed from diphtheria, or distorted from scrofula; and for the emaciated victim of consumption. These, having escaped from the filth and noxious air of the sick-room, can find untold benefit from a few hours' exposure to the sunlight, fresh air, and green foliage, and a rest and improvement which no drug can give. Many lives may be thus saved. What emotions of pleasure must the poor invalid experience as he crawls out from his gloomy and pestilent home, and looks upon the foliage, the lawns, the flowers, the water, and the works of art, of a well-kept park, all rejoicing in the bright sunlight!

The sanitary and picturesque advantages of a suitable proportion of pure water in an interior park are inestimable. It has been said that "water is to the land what the eye is to the face."[1] The Bois de Boulogne has two lakes, excavated at vast expense, containing an area of one hundred and seventy-four acres. The Serpentine, of Hyde Park, London, was excavated to the depth of forty feet, so pleasing is the view of water in a place of public resort. It moistens, refreshes, and cools the atmosphere coming in contact with it, and thus creates currents of air which sweep through streets in the neighborhood. Especially is this the case with interior tidal basins from the ocean, the temperature of which remains nearly the same through the year; and here cool water comes into a city twice every twenty-four hours. The remarkably low death-rate of London may be partly occasioned by the salutary influence of the Thames, which is there a thousand feet wide, and passes nearly through the centre of the city.

Says an able writer on the parks of Paris,[2] "We plant trees for their sanitary influence." Dr. Rauch[3] gives a "series of facts, clearly proving

[1] Hon. Horace Mann.
[2] W. Robinson.
[3] John H. Rauch, M.D., *Public Parks.*

that the infection and diffusion of malaria or noxious emanations are arrested by trees, whose structure and canopy of foliage act in a threefold capacity: first, as a barrier to break the flow; second, as an absorbent of those emanations; third, as eliminators of oxygen." The first fact he gives is, that in former days there existed on the south side of Rome, a thick forest, which protected the southern portion of the city and the neighboring district from the baneful influence of the effluvia of the Pontine marshes. After the removal of this forest the country became proverbial for its unhealthiness. Another "fact" he gives, on the authority of Dr. Lewis. Negro quarters were located "on the first prairie elevation above the low lands of a small creek, the fourth of a mile from the houses. The belt of low grounds frequently overflowed, causing water to remain in the holes over the entire breadth after the subsidence of the stream; but it was well shaded by a dense foliage, the plantation lying on the prairie in the rear of the cabins. This foliage was at length cleared away. Up to that time, some eight or ten years, the negroes living in this quarter had enjoyed uninterrupted health." The first summer after the forest had been cleared away "fever prevailed among the negroes with great violence, continuing till frost. The negro quarters were afterwards removed to the opposite side of the creek, about the same distance from it, but with an intervening growth of timber, and no fever has occurred in the place since." "Whole families," says Mr. Bartlett, "have resided near the Pontine marshes, and, by the intervention of shrubs and trees, have escaped for years the noxious effects of the nephitic poison which these putrid waters engender."[1]

Dr. Rauch gives several other instances of the disastrous effects of removing trees, some of which occurred during our late war of the rebellion. The ancient Romans recognized the sanitary advantages of trees in absorbing noxious effluvia.

In this we see the beautiful harmony of nature, that while animal life is constantly evolving deleterious products, vegetation as constantly demands and absorbs it to support its own vitality. Of the great sanitary value of trees in the interior of cities there can be no doubt. Their cooling and humid influence is refreshing. Their glory and beauty are charming.

The physical advantages of interior open areas are second only to their sanitary advantages. The vigor and strength of those who frequent parks are greatly promoted, and what is of more importance to the people of our cities, especially to the children, than an increase of physical stamina? Multitudes of children in cities are confined in small, poorly ventilated, and filthy tenements nearly the whole time. Some of them are locked in through the day, while their mothers are away earning a living for them. When they get into the public schools they are but little better off. They are there physically stultified, mentally glorified, and socially exalted above their future position in life. The appliances of our school system are mainly at war with nature. It fits them for show and sham in the world, but not for getting an honest living.

[1] *Public Parks*, from *Thompson's Annals*.

Little is being done at home or at school to develop their physical powers. The play-grounds in large cities are limited. Can children, exposed to such sanitary influences and subject to such training, grow up healthy and strong, capable of self-support and of being producers? We want suitable grounds for play and other physical exercises in the central parts of every city, such as you find in the open squares and parks of Paris. The Romans devoted one portion of the park to the exercise of athletic games.

We want interior open areas to make locomotion pleasant. We need more muscular exercise in the open air, and walking is one of the pleasantest and best. Our business men, who cannot see any advantages to be derived from an interior open resort, unless it in some way directly contributes to the profits of their business, greatly need the invigorating influence of daily walking in pure air. Says Sir Arthur Helps: "It seems a small thing to say, but it is a most serious thing with regard to the happiness of mankind, that a busy man, in these great centres of population, cannot, after the toils of the day, take a walk into the country; and there are hundreds of thousands of people that are so environed by houses that practically they never do it." What shall we say of the physical needs of the women of our large cities? The time was, half a century or more ago, when they thought little of walking four or five miles daily. Since conveyances have been brought to their doors half a mile taxes their powers to the utmost. With the disuse of their limbs in walking has come the inability to walk, and with this failure in muscular strength has come a host of physical infirmities. Transmit these infirmities, intensified as they are likely to be, and where shall we find the mothers of stalwart men of the next generation? Our women, most of all, need convenient, attractive open areas for walking.

The educational advantages of interior open spaces are, by no means, unimportant. People are very apt to think that the schools alone educate our children. This is an error. The education of the home, the street, the church, the store, the theatre, the play-ground, the saloon, and other surroundings of a great city, are much more potent. Uncleanness and impure air intensify evil influences and diminish good ones. Clean hands and a pure heart are inseparable.

Says the late Dr. Clarke, of Boston: "Foul air prompts to vice, and oxygen to virtue, as surely as the sunlight paints the flowers of our garden. The tired workman, who, after the day's labor, needs the repose and the relaxation of home, is apt to be driven from it by the close atmosphere of the house and the street in which he lives. He would, if he could, get into the fresh air of the country; but as he cannot do this he seeks the relief which drink and other excitements yield. If there was an attractive park convenient, he would seek it as instinctively as the plant stretches toward the light. The varied opportunities of a park would educate him and his family into the enjoyments of open-air pleasures. Deprived of these he and his are educated into the ways of disease and vice by the character of their surroundings.

Disease, ignorance, vice, and crime crowd into cities. There they find their surest protection and safe retreats. Their influence moulds. Multitudes of young enter the lowest forms of humanity. Cities should counteract these pernicious tendencies by furnishing elevated and healthful attractions. A park advantageously located, with its trees, its lawns, plants, and flowers; its variegated surface, its waters, its works of art, and all the beauty with which such scenes are flooded, would supplement the school and the church in reforming, educating, and elevating the community, and would lessen vice, corruption, and intemperance.

M. Robert Mitchell tells us that before the establishment of Paris squares the children went out but little; it was thought useless to dress them and make them clean, because they never went out of their own neighborhoods. The fresh air for them was only the threshold of vitiated atmosphere. With painful emotions he often saw the little, ragged, pale creatures, who apparently never thought of the filth in which they were obliged to live.

"Now," he says, "thank God the dark picture has become bright. Within a few steps of the poor man's house there are trees, flowers, plants, and gravel-walks, where his children can run about, and seats where their parents can sit together and talk. Family ties are strengthened, and the workman soon understands that there are calmer and more moral pleasures than those of the wine-cup." A child must not be allowed to be ragged for fear of being observed, and as he saw hundreds of children running, and jumping, and filling their lungs with country air that has been brought into Paris, he could not help saying to himself, "that, strengthened and developed by continual exercise, these youngsters would one day form a true race of men, which would give the State excellent soldiers, good laborers for our farms, and strong artisans for our factories."[1]

He tells us that squares were established in those neighborhoods where the atmosphere required to be constantly purified, and to this end trees of a particular sort were chosen for their power of absorption, and that the establishment of these squares "tends to regenerate the human race by the development of the physical forces by exercise in the open air; it improves the morals of the people, by allowing the workingmen to exchange the dirty wine-shop for an agreeable resting-place and a pleasant walk."

Dr. Rauch tells us that "it will be seen that public parks may be regarded as an unerring index of the advance of people in civilization and refinement."[2] The children of our schools, especially the younger portion, should be often taken out to parks by their teachers, for physical exercise, recreation, amusement, and instruction. There various games may be practised. At our parks children should not only find health, but an idea. They should there be taught lessons in natural history on the relations of vegetable and animal life and the growth of plants. A portion of ground should be set apart in our parks, especially adapted for the education of children. A bent may be thus given to the youthful

[1] W. Robinson, *Parks of Paris.*

[2] *Public Parks.*

mind, tastes formed for the cultivation of the soil, — a subject at present too much neglected.

A public garden in the interior of large cities is exceedingly instructive, attractive, and valuable. It should be its object to show living examples of the vegetation of the country, to grow in the open air plants from other countries of benefit for use or ornament; and also to display, as far as possible, the vegetation of distant and other countries. Gardens and orchards have to be replenished; their planting in cities and towns should be made more beautiful and varied. The pure, invigorating pleasures and material benefits of good gardening should, as far as possible, be brought to the doors of every owner of a rood of land, and a new charm given to the occupations of the gardens, and an increase to the much-needed physical vigor of our people. A public garden is a very suitable place for the works of art.

In the preceding considerations I have recounted some of the errors committed in the early architecture of the cities of Europe, the disastrous consequences that followed, and the surprising sanitary benefits that succeeded, their correction, by the better diffusion of their population, that we may profit by the lessons they have taught us, — lessons that seem to me to be of the utmost importance. It was not necessary to go to Europe to find mistakes in the early plans of cities. Probably there is hardly a city in this country that has not committed them, — errors that can never be remedied. But the mistakes of the old cities of Europe seem to be more palpable, and their correction more complete. The importance of retaining and improving, in all cities, general interior open areas, as ventilators and as public resorts for the people, cannot be overestimated, and the sooner the community is aroused to its urgency the better, for many cities are yearly losing opportunities of securing very desirable localities for squares, parks, or public gardens. Several small parks in the interior of cities are of infinitely more value than large ones outside, or in the outskirts. Says an able writer,[1] "The slight good effected by fine parks placed in or towards the outskirts of a city is as *nothing* compared with what may be carried out by retaining or opening up interior open spaces, squares or avenues, and improving them." Their value greatly depends on the convenience with which they are used, "those being the most valuable, other things being equal, through which the greatest number of people may be induced to pass without serious hindrance or inconvenience."[2]

[1] W. Robinson, — *Parks of Paris.*

[2] *American Cyclopædia.*

XXII.

IS TUBERCULAR CONSUMPTION A CONTAGIOUS AND PARASITIC DISEASE?

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The title of this paper indicates that this important question is not as yet fully set at rest; that the medical world is still divided on the subject; and these indications are borne out by the facts. For while it is now generally conceded, by those who have given the subject due consideration, that its communicability from animal to man and from person to person has been conclusively demonstrated, there are those high in authority in the medical world, eminent observers, who question the truth of this, and say it is not yet satisfactorily proved.

That the proper solution of this much-mooted question is of the greatest importance to the human race need hardly be asserted, when we take into consideration the fact that this disease kills more people than all the plagues, all the famines, and all the wars put together; that one-eighth of the human race fall victims to this fell destroyer. We regard it as one of the most important questions now agitating the medical and sanitary world.

It may seem presumptuous in us, one of the humble workers in the field of sanitary science, to discuss so formidable a subject, — a subject which has divided, and is dividing, the most learned and able observers and pathologists of our times, over which a most formidable intellectual battle has been fought, which might appropriately be termed the battle of the giants.

Having been a member of this humane and philanthropic Association for several years, and a close observer of its work, — an Association which ought to be eminently practical in its views and aims, and which is supposed to discuss all questions pertaining to sanitary science, — yet we have been surprised to see the many important questions extensively treated and discussed at its meetings, while this subject, which is of such paramount importance, has been passed by and ignored. Consequently we have concluded, although it may seem presumptuous, to briefly discuss the subject, in order to bring it before the Association, that it may receive some of the attention its importance demands. It is not our purpose to enter into an exhaustive discussion of the subject, as time and space will not permit; but merely to offer for your consideration a brief and condensed summary of the more important experiments instituted,

the testimony bearing on the subject, trusting the discussions which follow will develop and bring out more in detail the many interesting and important points connected therewith.

That the question is one of vital importance, and is attracting the thoughtful attention of many throughout the land, is evidenced by the extensive discussions now going on, not only in the medical and sanitary journals, but by the secular press of the country; also by the extensive demand for a paper on the subject we had the honor to read at the State Sanitary Convention at Battle Creek, Mich., March, 1881, — a demand which has greatly surprised us, coming as it has from learned colleges, State Medical Societies, and from prominent men in nearly every State in the Union.

CONTAGIOUS AND INFECTIOUS.

In discussing the subject we shall not attempt to reconcile the conflicting interpretation of the words contagious and infectious, as some writers have done. The two words are defined as synonymes, and yet in their use it is easy to discover different shades of meaning; and yet many writers use these adjectives interchangeably. Contagion, according to its derivation, signifies contact; and yet, in its common use, contact of person is not necessary for the communication of disease. The term used in this connection may not, as some writers claim, be accurate, scientific, or logical; yet we shall so use it, at the risk of being called illogical and unscientific by those who, by a hair-splitting attempt at scientific refinement in the use of words, allow the vital question to be obscured. We shall use the word contagious in its broadest and most popular sense, which is synonymous with communicable, transmissible, and catching.

The point we shall endeavor to keep in view in this discussion is, can consumption be communicated from one person to another in any other manner than by heredity, or from animal to man? These are the practical questions in which sanitarians, as well as the common people, are, or ought to be, interested.

From time immemorial, physicians, as well as the laity, have recognized the fact that consumption was in a certain degree contagious. He who will consult the literature of the last century will readily come to this conclusion. Aristotle (330 B.C.) says: "It makes the breath corrupt and offensive, and those who breathe it suffer"; and adds, "the Greeks of his day generally believed in its contagiousness." Hippocrates had advanced this idea in his time (400 B.C.). Galen and many others of the old masters entertained the same views. Most authors, and some entire communities, believed in it, previous to about 1775. In Italy it was a common custom to disinfect houses where consumptives had died, and burn clothing they had worn. Morgani said he was afraid to dissect a consumptive. But this question, like many others, had its ebb and flow, so to speak. About a century ago a reaction took place, and, as in many other medical questions, the fashion changed, and scepticism took the place of belief,

and for the last one hundred years but a few can be found who believed in its contagiousness. This opinion prevailed until Villemin,[1] in 1865, startled the world by a series of articles on "The cause and nature of tuberculosis, and its transmission by inoculation," in which he maintained, by argument and actual experiments on lower animals, its communicability. He said: "Tuberculosis is the effect of a specific or virulent causal agent; in one word, a virus. Introduced into an organism capable of being affected by it, this agent is reproduced, and at the same time reproduces the disease of which it is the essential principle and the determining cause." These experiments and deductions from so eminent an observer created, as we intimated, quite a commotion among the leaders of the medical world, many of whom went to experimenting to ascertain for themselves if the conclusions of this eminent physician were correct. The result has been a heated controversy, in which some maintain his grounds were tenable; others that they were not; they said the same results ensued if indifferent substances, such as portions of putrefied muscle, fatty liver, vaccine virus, cinnabar, analine blue, etc., were used. The subject has been investigated experimentally quite thoroughly since then from different stand-points:—

1. By direct inoculation with tuberculous matter.
2. By its introduction as food into the alimentary canal.
3. By allowing atomized particles to be inhaled into the lungs.

In summarizing these experiments we will not follow chronologically the order in which they were published to the world, but rather follow out each class separately.

DIRECT INOCULATION.

The original experiments of Villemin came under the first class,—direct inoculation. His method was to take a small portion of the tuberculous matter, as big as a pin's head, from the body of a person or animal afflicted with the diseases and introduce it beneath the skin of the animal he experimented on, such as a rabbit or a dog. He found that the wound speedily healed, but in four or five days the seat of inoculation began to be red and swollen, and a tuberculous mass became developed there, causing an ulcerated wound. If these animals were killed after the fifteenth day from the inoculation, tubercles were always found in the viscera, and in the lungs there were usually abundant gray granulations, as well as extensive infiltrated masses of tubercle; while at the seat of inoculation a caseous mass was usually found, surrounded by yellowish granulations. The corresponding lymphatic glands were enlarged, and often contained scattered nodules of tubercle; some having undergone caseous degeneration. He obtained the same results from injecting hypodermically the sputa of phthisical patients in very small quantities mixed with water; even the blood of a consumptive after death produced general tuberculosis in rabbits.

[1] *Gazette Medicale de Paris*, December 16, 1865.

To prove that it was really the tubercle inoculated which produced the tubercle found after death, he substituted in other experiments various materials, such as pus, the discharge of cholera, etc.; but after their use no tubercle was found.

He also experimented by taking his inoculating material from animals, especially from the bovine species; and his results were the same, convincing him that tuberculosis in the cow was identical with that in man. As a still further proof he inoculated a rabbit with material taken from a rabbit he had artificially rendered tuberculous. These, after death, showed the same tuberculous condition.

Hoffmann[1] inoculated two rabbits with cheesy matter and produced miliary tuberculosis.

Genondet[2] also inoculated with softened tuberculous matter, and found, on killing the animals five months afterward, a mass of cheesy and partially softened glands in this mesentery.

Herard and Cornil[3] put on record their success in inoculating two rabbits with tuberculous matter, and their failure when other substances were used, such as inflammatory products. Petroff,[4] M. Simon,[5] Chauveau,[6] and Bollinger,[7] all reported that they had been able to verify the experiments of Villemin, Klebs, and Valentine,[8] experimented in this field. They introduced the tuberculous matter into the peritoneal cavity of animals. In those cases where they used true tuberculous matter there followed tubercular peritonitis, and then a general infection. In nineteen cases, where other than tuberculous matter was used, only negative results were obtained. They claimed tuberculosis was communicated by means of a specific germ, which Klebs claims to have isolated and rendered visible under a power of eight hundred to one thousand two hundred diameters. In order to test these assertions Schuler and Reinstadler[9] prepared a fluid, known as Bergman's fluid, in which they propagated these germs or bacteria. These artificially propagated bacteria were introduced into the organism of animals and invariably produced tuberculosis.

These experiments were several years before those of Koch, lately published, which are creating such a furor throughout the country, and which will be discussed further on.

All of the experiments so far were performed on lower animals; but we have now to relate a very remarkable and conclusive experiment on the human subject. Three medical men of Syria, Greece, Demet, Paraskeva, and Zallonis inoculated a man of fifty-five with tubercle. He

[1] *Deutsches Archiv fur Klinische Medicin*, 3 Bd., S. 116, 1867.
[2] *Gazette hebdomadaire*, 1867, No. 2.
[3] *La Phthisie pulmonaire*, Paris, 1867, page 555.
[4] *Virchow's Archiv*, Bd. 44, S. 129.
[5] *Pathological Society*, March 19, 1868.
[6] *Receuil de Med. Vet.*, 1872, page 337.
[7] *Archiv fur experimentelle Pathologie und Pharmakologie*, Bd. 1, S. 356.
[8] *Virchow's Archiv*, Bd. 44, S. 242.
[9] *Archiv f. Exp. Path.*

was suffering from gangrene of the left great toe, due to the obliteration of the femoral artery, to whom death was inevitable, as he had refused to submit to amputation. His lungs were carefully examined and found to be sound. They inoculated the upper portion of the right leg with sputa from a phthisical patient. Three weeks later there were signs of commencing induration in the right lung. The patient died on the thirty-eighth day after the inoculation, from gangrene. At the necropsy there were found at the apex of the right lung seventeen small tubercles, varying in size from that of a mustard-seed to that of a lentil. Two similar tubercles were found in the left apex, and two others in the liver. The experimenters concluded that the embryonic state of the tubercles and their limited number were due to the short time since the inoculation.

In 1877 some remarkable experiments were put on record by Cohnheim[1] and Solomonsen, which it seems to us are so striking and conclusive that all doubts must disappear as to the inoculability of human tuberculosis into animals to the full extent asserted by Villemin.

These experimenters introduced the tuberculous matter into the anterior chamber of the eye and then watched the changes as they occurred. A piece of freshly extirpated scrofulous lymph gland was introduced through a linear incision in the cornea into the anterior chamber of the eyes of Albino rabbits. After a few days the opacity of the cornea cleared up, as did also the aqueous humor caused by the operation, and the foreign material could be seen lying against the lens, where it remained for weeks, gradually growing smaller. At the end of about thirty days a sudden change appeared: there sprung up in the tissues of the iris a number of small, transparent, grayish nodules, entirely different in appearance from what was produced if simple masses of inflammatory detritus was used for the inoculation. The smallest amount of true tuberculous matter invariably produced first local, then general, tuberculosis. The fact that these collections or masses were tubercular was proved after the manner of the chemists in recognition of the action of poison, that is, by insertion into the bodies of other animals. Cohnheim tried in vain to excite tuberculosis in the iris by introducing non-tuberculous animal tissues of the most varied kind.

Of the greatest significance is the fact that these experiments were undertaken in a spirit of scepticism, as Cohnheim was one of the most pronounced opponents of the specificity of the virus of tuberculosis when first promulgated by Villemin. Cohnheim concludes everything depends upon the virus. Harnsell and Baumgartner both verified these experiments.

The latter took his virus from cattle killed from "pearl disease," or tuberculosis. He concludes "there is some form of microccus which communicates the disease."

Vogel[2] experimented, and with entirely negative results.

[1] *Vorlesungen uber allegemein, Pathologie*, Bd. 1, S. 607.

[2] *Deutsches Archiv fur Klinische Medicin*, 2 Bd., S. 364, 1866.

Lebert and Weiss[1] and Waldberg[2] all performed like experiments, but came to different conclusions. They regarded these tubercles as the result of simple inflammatory processes, and denied to it any specific character.

Others have experimented, but time forbids mention here. The above are the chief experiments by direct inoculation.

INFECTION THROUGH THE ALIMENTARY CANAL.

We will now consider the second class of experiments, with food containing the virus introduced into the alimentary canal.

Gerlach[3] in 1869, then director of the Royal Veterinary School in Hanover, was the first who experimented in this direction. He obtained positive results in five out of six cases. Two rabbits, two swine, a lamb and a calf, were fed on milk from a cow afflicted with "pearl disease," or tuberculosis, for two or three months, when they died with tuberculosis.

Klebs also experimented from this stand-point, and verified Gerlach.

Jacob mentions that a dog that swallowed for some time the sputa of his tuberculous master showed on a post-mortem examination tuberculosis of the lungs and pleura.

Professor Chauveau, of the Lyons Veterinary School, who has for years been experimentally studying the intimate pathology of the various *contagia*, presents conclusive proofs of the transmission of bovine tuberculosis. The success of his researches has afforded some startling results pertaining to the use of diseased meats, and his well-designed experiments on cattle have settled among comparative pathologists the question of the virulence of tuberculosis. The discovery that certain rich virulent matter can infect as readily through the digestive organs as by any other channel has given him a world-wide reputation.

The celebrated Professor Orth, of Gottingen, has lately published his researches and experiments, from which we extract the following: "He fed fifteen animals with tuberculous matter from a diseased cow, nine of them became infected; of these four died. The remaining five became extremely emaciated and were killed. On examination nearly all of the organs of the body were found involved in tuberculosis." Orth suggests that the infection is connected with bacteria, but was unable to demonstrate it.

Prof. Colin, of the Albert Veterinary College, has contributed a series of observations on the communicability of tuberculosis, which are very conclusive, and shed a flood of light on this important sanitary question.

The recent investigations of Prof. Bollinger, of the University of Munich, on the artifical production of tuberculosis as induced by the consumption of diseased milk, are of the greatest importance. He claims that the milk of such animals has a preëminently contagious influence, and reproduces the disease in other animals experimented on from

[1] *Virchow's Archiv*, Bd. 40, S. 142.
[2] *Berlin Klinische Wochenschrift*, 1867, Nos. 51, 52.
[3] *Virchow's Archives*, Bd. 51, S. 290.

that point of view. He believes that such milk, even when boiled, retains its injurious properties. Further he maintains that beyond doubt the tuberculosis of the human subject, though not completely identical with that of the cow, is yet strictly analogous to it, and that consequently the wide prevalence of tuberculosis in the native herds — at least five per cent. of which are affected — is a standing danger to the community.

Dr. Fleming[1] of the British army, who has given the subject much attention, says, "That the tuberculosis of cattle is a transmissible disease, and can be conveyed not only to animals of the same, but also to those of other species, in various ways, is now an established fact. . . . Some of the best pathologists of Europe have furnished additional testimony as to the readiness with which this transmission takes place, not only by inoculation or ingestion, but also, it would appear, by cohabitation of diseased with healthy animals. There is every reason to prohibit the use of milk from cows affected with tuberculosis, and especially for infants, who mainly rely upon this fluid for their sustenance. As the commencement of phthisis is generally so insidious in the human species, it is most difficult to arrive with any degree of certainty at the causes which directly induce or favor its development; but, from the evidence before us, it is to be feared that at least one of the sources must be referred to the utilization of the carcass, but more especially the milk, of phthisical cattle as food. It is certain that tuberculosis is not uncommon, and that it is a destructive disease among dairy cattle especially, and more particularly those of towns; that the udder of these animals is one of the glands not unfrequently involved; that infants and adults consume milk in large quantities; and that phthisis is a very prevalent and fatal malady in the human species, and chiefly among the dwellers in towns and cities."

Numerous experiments are on record by such eminent men as Harnes, Zurn, Roloff, Toussant, and others, which show conclusively that material derived from cattle suffering from perlsucht, when inoculated or given as food to cattle, pigs, or sheep, produces the same disease, resembling general tuberculosis; but space will not allow further evidence on this point.

EXPERIMENTS BY INHALATION.

We shall now consider briefly some of the experiments performed to ascertain if the disease is communicable by means of inhalation into the lungs. Tappeiner, of Meran, was the first, we believe, to experiment in this direction. He argued that, if consumption is contagious, it must, in all likelihood, be conveyed by inhaling with the breath fine particles of tuberculous sputa, thrown into the air by coughing. To settle this point he selected eleven dogs, which were arranged in the following manner: The dogs were placed in cages, each about one cubic metre in dimensions; about a tablespoonful of sputa from persons affected with tuberculosis was diluted with water to three hundred or five hundred cubic

[1] *Veterinary Journal*, December, 1879.

centimeters and then thrown into the cage by means of a large atomizer. Although the experiments varied, they usually lasted about two hours each day for three or four weeks.

The dogs had apparently good appetites, presented neither cough nor diarrhœa; they ate freely, and were cheerful and nimble without any symptoms of illness, unless a slight wasting and arrest of development. At first view the experiments gave a negative result. But the autopsy revealed a general tuberculosis; also the fact that the atomized liquid had penetrated the pulmonary cells, as was shown by coloring the solution with carmine.

These experiments seemed conclusive, but were somewhat weakened by those of Dr. Max Schotteleus, of Wurzbourg, who substituted the sputa of bronchitis for that tuberculosis (the experiments being alike in other respects), who claimed to obtain the same results. He afterward used indifferent substances, such as cheese, brain, and cinnabar, with varying success. The organic substances induced a local inflammation, with a tendency to the destruction of the parenchyma, accompanied by circumscribed foci of inflammation in the lymph vessels and notable changes in the walls of the bronchi. The inorganic substances did not produce any marked effect on the general economy.

Tappeiner has repeated his experiments again with positive results. In the cases where phthisical sputa was used tubercles were found in four cases, the anatomical diagnosis resting on the authority of Drs. Israal, Gruitz, Friedlander, and Professor Virchow. In those cases where sputa from bronchitis was used the results were negative. In regard to the experiments by Schotteleus he claims he used too large quantities, so that they acted as foreign or putrid bodies.

The same conclusions are supported by the observations of Bertheau, which were made on dogs and rabbits, and in which he was careful to use other animals for control.

Other experimenters, such as Sanderson, Fox, Colin, Freidlander, opposed these views, and claimed the same results could be produced if non-tuberculous matter was used as the innoculating material. They claimed tubercles could be induced in the rabbit and guinea-pig with simple pus, caseous material of inflammatory origin, or with sarcoma; and it was maintained that such substances as analine blue, cinnabar, caoutchouc, cotton, caused similar effects. Then it was said by others that the lesions produced by Villemin and others were not tubercles at all, but simply inflammatory lesions or embolic infarcets. Dr. Hippolyte Martin, of Paris, in a French journal, April, 1881, published some very interesting and conclusive experiments made to determine this question. The object of his original experiments was to show that inoculation with true tuberculous matter was alone capable of producing true general tuberculosis, and all the lesions produced by the introduction of foreign bodies of a non-tuberculous nature were not true tubercle, but what he terms false or pseudo-tubercle. He insisted that it was of prime importance that all these inoculations should be performed with strictly antiseptic precautions. The

non-infectious nature of pseudo-tubercles was best shown by attempting serial inoculations. The second animal subjected to inoculation from pseudo-tubercular matter of the first, showed scarcely a local lesion, and the third showed no effects at all; whereas in true tubercle in a series of consecutive inoculations the virus seemed to be all the more active with every new animal operated upon. Dr. Martin's experiments seem to establish the following conclusions: —

1. Tubercle, inoculated locally, determined after incubation the formation of a local tubercle, and after a variable time general tuberculosis, and the virus seems to acquire increased activity by inoculation in series of animals of the same or allied species.

2. But, if we inoculate with matter obtained from those non-tubercular foreign bodies, they never give rise to tuberculosis, and after two, or at least three, terms of the series they even lose their power of producing a local inflammation, and become absolutely inoffensive.

"Here, then," he remarks, "we have two inflammations: one specific, infective, and truly tuberculous; the other non-specific, non-infective, and not true tubercle; but both having the same anatomical structure, and the former differing from the latter by the presence of the properties of a morbific agent at the present time unknown.

This unknown morbific agent, if we are to believe the latest investigators, has been found and described. This brings us to a discussion of the subject,

IS IT A PARASITIC DISEASE?

Many writers on the subject have claimed this to be the case, and some have announced the discovery of the specific germ. Schuller reported having found micrococci in tubercular nodules. Aufrecht had seen in tubercle-mass a minute organism of rods and granules which to him possessed the same significance. Klebs has demonstrated in tubercle a bacillus, which he held to be its specific germ. He asserts that minute micrococci occur constantly in tubercular matter, and they represent the *materies morbi* (Klebs *monas tuberculosum*), by which artificial cultivation Klebs maintained that he has obtained this *monas tuberculosum* in a pure state, and that it produced tuberculosis when inoculated into animals.

More recently Dr. Deutschmann, in a series of reliable experiments, confirmed the theory that human tubercular pus contains minute micrococci, similar to those observed by Klebs and Schuller.

The theory originated by Dr. James H. Salisbury is, that consumption is due ordinarily to the presence of the *mycoderma aceti*. The bacilli which he describes are simply the embryonic forms, the *mycoderma aceti*. It is a vegetable parasite, and not animal. The evidence on which this theory rests is as follows: 1. In 1858 the propounder took one thousand and twenty-six hogs and fed them on farinaceous food containing alcoholic and vinegar fermentation. In eight weeks' time two hundred and forty-six swine died, — all the swine being more or less sick. One

hundred and four of them were examined after death, and found to have the physical appearance of consumption of the lungs. The vinegar yeast was found in the blood of all examined, and traced to the lungs and skin; per contra, after slaughter, no trace of tubercle was found in one hundred swine that had been kept in open air and fed on good, sound, sweet maize. 2. He hired men by the month, and fed them on farinaceous food containing alcoholic and acetic-acid fermentations. After they had had consumption of the bowels the vinegar yeast was detected in the blood and sputa.

But it remained for Dr. Robert Koch, member of the Imperial Board of Health, Berlin, to demonstrate their existence more conclusively, and to point out the proper method for their elimination and inspection under the microscope. March 24, 1881, in an exhaustive lecture, accompanied by illustrations, before the Berlin Physiological Society, he narrated his experiments, observations, and conclusions, so forcibly and practically that he has convinced most people, who are conversant with his labors in this field of experimentation, that tuberculosis is, beyond all doubt and peradventure, a bacteria disease.

"By a certain method of coloring the preparations (methylin, violet, and resuvin) Dr. Koch was able in every instance to demonstrate the characteristic, motionless bacilli, especially in places where the process was more recent, and more sparingly where the process was of longer standing, as in the giant cells.

"He succeeded in cultivating this bacillus outside of the animal body, and free from all admixture of foreign animal material, on a specially prepared blood serum gelatine. The bacillus grows very slowly, thrives only at a temperature of between thirty and forty deg. Cent., and also differs essentially in other respects from other pathogenic bacilli and micrococci cultivated in a pure state."

With these bacilli, cultivated outside the body for two hundred days, from flask to flask, Dr. Koch succeeded in a series of experiments, conducted with all conceivable precautions, in inoculating tuberculosis (and the "pearl disease" of cattle, which shows the same bacilli) in a characteristic and decisive manner. Inoculation in different places, as well as injections into the circulation, produced acute miliary tuberculosis, and, after a longer interval, cheesy processes. He even succeeded, by means of these inoculations, in rendering tuberculous, in a comparatively short time, animals which otherwise enjoy immunity from the affection, such as dogs and rats.

The parasite, as described by Koch, is a very minute, rod-shaped body, in its greatest length having dimensions one-half to one-quarter the diameter of the red blood-globule.

Koch investigated, besides, a large number of animals which had become the victims of tuberculosis by inoculation. The latter had been performed with all kinds of tubercular matter, viz., with gray and cheesy

tubercles of human lungs, sputa of phthisical persons, tubercular masses of monkeys, rabbits, and guinea-pigs, spontaneously diseased with tuberculosis, etc. The number of animals infected in this manner was one hundred and seventy-two guinea-pigs, eighty-two rabbits, and five cats. In all these the bacilli were not a single time wanting. "Based upor my very numerous observations," says Koch, "I consider it proved that, in all tuberculous affections of men and animals, these tubercle bacilli are present, which have been described by me, and which are distinguished from all other micro-organisms by the peculiarities mentioned."

Koch demonstrated clearly by control of animals, and by the whole septic method of procedure, that a mistake with spontaneous tuberculosis, or an accidental infection of the animals experimented upon with tubercular virus, is totally excluded, and that he is justified, therefore, in contending—

"That the bacilli met with in the tubercular material are not accompanying the tubercular process, but the cause of the same, and that we possess in the tubercular bacilli the actual tubercular virus." If this is so, we can readily perceive we have at last gained the necessary knowledge to define exactly the disease which we understand by "tuberculosis,"—a thing impossible before a definite criterion for tuberculosis was wanting. One considered miliary tuberculosis, phthisis, scrofulosis, perlsucht, all one and the same morbid process; while others, with equal right, took them to be different maladies. In the future it will not be difficult to say what is tuberculosis and what not. Koch says: "Not the peculiar structure of the tubercle, nor its want of blood-vessels, nor the presence of giant cells, will determine the question; but the demonstration of tubercle bacilli either in the tissues by color reaction, or by cultivation upon stiffened blood serum. Considering this criterion as a guide, we have, according to my investigations, to believe miliary tuberculosis, caseous pneumonia, cheesy bronchitis, tuberculosis of the intestines and of glands, perlsucht of cattle, spontaneous and inoculated tuberculosis of animals, all to be identical."

Koch adds, the vast majority of cases of tuberculosis have their beginning in the respiratory passages, and that the infectious material becomes first apparent in the lungs or in the bronchial glands; so that the idea lies near, that the tubercle bacilli are usually inhaled with the atmosphere, being attached to dust particles. The manner in which they get into the air is made plausible, if we remember in what enormous quantities the tubercle bacilli, which are sojourning in the cavities, are expectorated by phthisical persons with the sputa, which are wafted in all directions. Koch was never able to find the bacilli in non-phthisical persons, notwithstanding he examined an equal number of such. He says drying the sputa does not deprive it of its virulence, and adds, "This leads me to conclude that this dry phthisical sputa sticking to the floor, carpets,

clothing, etc., keep their virulence for a long time, and if inhaled as dust into the lungs may cause tuberculosis."

Ehrlich and Baumgarten have repeated these experiments, and pointed out improved methods of isolation, which may be found in London *Lancet* and Cincinnati *Lancet* for July 15, 1882. In this connection we have just seen a paper by Dr. Sternberg, a member of this Association, who has failed to find these bacilli described by Koch, although he has searched diligently and persistently. We hope, if he is present, he will give us an account of his experiments in this direction. This does not count for much against such a careful and painstaking observer as Koch, for one positive result counts for more than a score of negative.

CONCLUSIONS.

It seems to us that he who will carefully study and weigh these various experiments by such painstaking and eminent observers can but come to the conclusion that tubercular consumption is a contagious and parasitic disease; that it can be, and has often been, communicated to other animals by direct inoculation, by food taken into the stomach, and by inhalation. It only remains to develop from the cultivated parasite tuberculosis in man, as it has been by the natural tubercle, as mentioned in this paper, to complete the cycle of evidence, and to establish this discovery among the greatest facts of medical science. We are aware that the past is strewn with wrecks of supposed discoveries which time has shown to be imaginary; still we shall hope for this all that is claimed. Although but few have been able to test this matter experimentally, yet many of us have seen striking cases in which it appeared evident the disease was communicated from person to person, sometimes taking several members out of the same family, and those who were not by any known means subject to any hereditary taints.

We mention the following, coming under our own observation in the city of Flint, Michigan, it being in the family of M. B., an intelligent and industrious Irishman, whose family consisted of a wife and nine children, who were formerly healthy and robust. About nine years ago one of the sons, a lad of fourteen years of age, contracted tuberculosis, and after a sickness of a year died. Soon after this the father, then two daughters, caught the disease, and succumbed after a few months' siege with this uncompromising enemy of the human race. Other members of the household showed symptoms of the disease; but, by timely treatment and removal from the infected house, they escaped with their lives.

The following remarkable case is reported by Dr. H. Weber: A young man who had lost his mother, two brothers, and a sister of phthisis, and who himself had twice had hemorrhage from the lungs, had quite recovered, and married at twenty-seven, being then perfectly well. His first wife was in good health, and came of a healthy family. She died of consumption after her third confinement. The man shortly married again an "apparently healthy woman"; and this second wife, after a year of married life, died of "galloping consumption." He again married a healthy

young woman of twenty-five, belonging to an "exceptionally healthy family." During her second pregnancy she developed symptoms of phthisis, which ran a rapid course, and ended fatally in about eight months. Undaunted, this man married again, a fourth wife, of healthy antecedents. Three months after her first confinement she began to show symptoms of phthisis, and, notwithstanding two sea-voyages, died after nine months, with tubercle in liver, lungs, and spleen. Though the husband of these four wives, who was a sailor, remained in apparently good health, physical examination revealed the existence of morbid changes at the apex of left lung. It is possible that the life at sea kept his disease in abeyance, for when he had to lie-by, on account of a severe fracture, the disease became active, and he died of consumption within two years.

A book might be filled with cases similar to the above; but we forbear.

Then, if it be so, that consumption is a contagious disease, it behooves us as sanitarians to see to it that the great source of infection — the sputa of phthisical patients — is done away with by their immediate destruction, thus preventing the germs being wafted with the air promiscuously about, endangering the health and lives of nurses and attendants.

We should also see to it that meat and milk infected with these parasites are not allowed to be eaten, or become articles of commerce. Much can be done individually; but we need, above all things, in a matter of this kind, necessary

SANITARY REGULATIONS.

It seems to us we need enlightened sanitary legislation. The public health is involved, and its demands are absolute. There is no doubt but the traffic in this country in diseased meat and milk is quite extensive, and calls for prohibitory legislation. We ought to have a vigilant Board of Sanitary Inspectors in every State in the Union authorized to act in every emergency. Public health has made such immense progress that no civilized government can well exist without having competent medical men as health-advisers in public health matters.

We believe the United States is the only civilized nation where the machinery of government is not provided by law with a Board of Medical Counsellors. This National Association, which is supposed to reflect the enlightened sentiment of the country on public health matters, ought to move in this matter at once.

We sincerely hope this late discovery will lead to improved methods in its therapeutics, but, above all, in its prophylaxis; for the old adage, "An ounce of prevention is worth a pound of cure," holds good in this case as well as others.

XXIII.

THE NEGRO MORTALITY OF MEMPHIS.

By G. B. THORNTON, M.D.,
President of the Memphis Board of Health.

THE high negro mortality of Memphis, in comparison with that of the white population, which has increased for the first nine months of 1882 over that of the two preceding years, and the high death-rate this gives the city as a whole, has induced the following comparison, with comment upon the causes for this excess. By the United States census of 1880 the population of the city was 34,000, — white, 17,293; colored, 16,707. The United States census, taken in the summer of 1880, shows 33,593 (official). In the last annual report of the Board of Health the round number 34,000 was taken for convenience. This was thought too low at the time, especially for the white population. It was taken within one year after the yellow-fever epidemic of 1879, before Memphis had regained some of its white refugees, who have since returned, and also at a season of the year when many white residents are temporarily absent, — a number of whom are known to have been omitted.

The total deaths for 1881 were 1,477, — white, 665; black, 806. The death-rate for the whole population, calculated upon 34,000 for 1881, made a total death-rate of 43.26 to the thousand. Calculated upon their respective populations it was 34.44 for the white, and 48.24 for the negro population per 1,000. The 1,471 total deaths for the city included strangers and non-residents, who died in the city hospital. With these eliminated, the total death-rate would be reduced to 38.70. The last City Directory, compiled from a canvass of the city in 1881, places the population, including the immediate suburbs, at 46,000. Assuming this to be correct, it would allow a fair estimate of the city proper at 40,000, which would reduce the death-rate to 36.02 to the thousand. The population of the whites and negroes of Memphis by the United States census of 1880 is very nearly equal, — the whites being less than 1,000 in excess, though the death-rate among the negroes exceeds the whites for 1880 and '81, and for the first nine months of 1882 is nearly 50 per cent. greater. Since this United States census was taken, in 1880, the white population has increased in a greater ratio by immigration than the negro, which would leave a still greater difference in the comparative death-rate of the two races. To account for this difference requires an analysis of the mortality tables of the Health Office, with a study of the causes of death

and the influences common to both races, with those affecting the one more injuriously than the other. By city ordinance, burial permits are required before any disposition of a dead body can be made, either by burial in one of the local cemeteries or by removal for interment elsewhere, and no such permit is granted by the Board of Heath, except on a certificate of death, stating name, age, sex, color, social relation, nativity, term of residence, etc., signed by the attending physician or the county coroner. Memphis has had no epidemic since the yellow-fever epidemic of 1879. There were a few deaths in 1880 and '81 from the three zymotic diseases, scarlet fever, measles, and diphtheria, but at no time did either disease prevail to any serious extent.

The total deaths for these two years from these diseases, among both white and colored, amounted to 71, and no death has been reported from either for the first nine months of 1882. The first death from small-pox for a number of years past occurred in January, 1882, and for the first nine months of this year only 29 deaths from this disease occurred in the city, — 8 among the white, and 21 among the negro population.

The zymotic diseases which have proved so fatal in some more northern localities within the past few years have contributed very little to the death-rate of Memphis, among either whites or negroes, and now that the city is well sewered, paved, and has good surface and underground drainage, besides being vastly improved in many other respects, there is substantial reason to base the opinion that in the future these diseases will be less frequent in occurrence and less fatal in results. The following table, compiled from the records of the Health Office, shows the ten diseases credited with the largest number of deaths each year in question, and which may be considered the most constant causes of death: —

Diseases.	1880.		1881.		First nine months 1882.	
	White.	Colored.	White.	Colored.	White.	Colored.
Consumption	82	85	86	85	30	81
Pneumonia	19	46	24	55	9	27
Diarrhœa	26	24	33	35	12	23
Dysentery	20	26	31	46	2	14
Dropsy	13	19	15	35	5	20
Debility, Marasmus, Dentition, Inanition, Premature Births	35	66	46	116	33	95
Other Causes	296	297	430	434	168	260
Totals	491	563	665	806	259	520

It will be observed that consumption and acute lung affections take first rank, and for each year the black exceeds the white race, and for the first nine months of 1882 its death-rate from these causes is above 50 per cent. in excess. This I account for to a great extent from an exposed and improvident life, due to a want of proper care, both in domiciliary accommodations and a general want of physical comforts during inclement periods of the year.

Why tubercular consumption should develop so rapidly among this class of people which heretofore was almost exempt from it is, I think, due to the radical change in their mode of living. This change does not consist merely of locality in the city from a strictly agricultural life in the country, under which many of them were brought up, and their parents before them, which is most conducive to longevity for either race; but a change in occupation and an irregularity in habits, induced by periods of idleness, either voluntary or from force of circumstances, and a totally different mode of living, incident to an individual liberty, which, with many, means an unrestrained license for the indulgence of the animal appetites and instincts, which in many instances is the cause of acquiring diseases the gravity of which they do not realize, and for the relief of which they have very limited power. The venereal diseases are a fruitful source of rapidly undermining the constitutions of many, and rendering them easy subjects of rheumatism, tuberculosis, dropsies, and all that class of diseases embraced under the general term marasmus, or a general physical debility.

In the above table I have placed debility, marasmus, dentition, inanition, and premature births under one head, and counted them as one disease, the relation between them being close. It will be noted that in this group the negro race is at a double disadvantage each year. There are two classes of the negro population of cities, if the records of Memphis can be taken as a fair illustration of like conditions elsewhere, that are at a decided disadvantage in the struggle for existence in comparison with the same classes of the white race. The first is of that period from infancy until they pass the wholly dependent age, say the first five years of their lives; the other after they pass beyond the time of active capability and become dependent upon others of their own color, either from senile or acquired debility. This I think will be found to exist generally through the country, as well as in the cities, though to a less extent in the country, circumstances there being more favorable to both classes. My statistics and observations, however, are limited to Memphis. In support of this opinion in regard to children, I give the number of deaths of five years and under, of both whites and blacks, for the three years in question. In 1880 there were 109 white and 211 black, and in 1881, 204 white and 356 black, and, for the first nine months of 1882, 63 white and 222 black children of this class who died. A large majority of these deaths occurred among the poorest and most improvident class of people of both races. The record shows the largest numbers credited to the group of debility, such as marasmus, inanition, premature births, etc.,

proving that the greatest mortality among this class is not due to acute diseases, but to a want of domestic care and those comforts which are essential to the well-being of a child.

Many of the negro children born in cities have the hereditary syphilitic taint, acquired from one or perhaps both parents, and develop early strumous affections. This affected class rarely attains the age of adolescence, and if they reach maturity their lives are precarious, and they succumb easily to exposure and acute diseases. This may account to some extent for the seeming susceptibility of negroes to glandular affections and a tendency to scrofulous degeneration.

I think that, if statistics were more accurate, they would show a larger relative mortality from diseases affecting the glandular system than they do. All certificates of death, though given by physicians, are not accurate as to the specific cause of death. Many negroes, perhaps the majority, have no regular medical attendance; and it not unfrequently happens that the physician who signs the certificate has seen the patient only once or twice, and is careless in diagnosis. Other certificates for this class by the coroner are still more obscure. *Tabes mesenterica* might be substituted in many cases for debility, marasmus, and consumption. Negro children have one race advantage over their white contemporaries, — they are less susceptible to the endemic malarial fevers of the South, and, when attacked, are more amenable to treatment. Another advantage in some cases of sickness is, being of a more obtuse nervous organization, they are less susceptible to impressions through their nervous system, and are less liable to nervous complications, as evidenced by convulsions and exhaustion, the result of long periods of wakefulness. This want of acute nervous susceptibility is perhaps more manifest in negro women than children. They are relatively not so liable as white women to derangements of the catamenia, or to disorders of their reproductive organs, and, though the functions of these organs may be disturbed from various causes, there is not that acute suffering, nor is their general health so liable to be affected. Nervous rigors and hysterical paroxysms from menstrual suppression, ill health from any irregularity during and subsequent to labor, such as eclampsia, puerperal fever, puerperal mania, etc., are less frequent with negro than white women. Of course all laboring classes of any race are physically more hardy, and, as a consequence, less liable to pathological conditions arising from nervous derangements; but aside from this the negro race is not so sensitive to pain or liable to physical infirmities through mental influences. It may be that a higher standard of civilization, through education and the influences incident to what are considered the refinements of a better social life, may develop a more acute nervous organization, and, as a consequence, the infirmities liable to be induced thereby.

Negroes are seldom the subjects of chorea and epilepsy, nor is insanity so frequent or varied among them as with whites; the only types which I have ever seen among them are those of a passive character, — idiocy and dementia. Incidentally I will mention there is a mental obliquity, —

a species of monomania, — which is peculiarly Senegambian; an eccentricity of the race, due, perhaps, to their present crude state of civilization. That is a superstition to the extent of what is called by them being "conjured," "tricked," or "put under a spell," by another negro, (never a white man with them; he has no such power). This is not a mesmeric influence, but a belief, and occasionally affects the health of a negro. It seems to affect them somewhat as nostalgia does white people. While under its influence there is an indifference to the ordinary affairs of life, with a temporary loss of appetite and physical energy. A few instances are on record in the criminal courts where the subject of the delusion has committed violence upon the supposed author of the trouble. But insomnia and those mental depressions, the result of business troubles and social bereavements, which occasionally undermine the physical health of white people, are seldom, if ever, the lot of the negro.

Negro families, as a very general rule, are not held together by the usual domestic and consanguineous ties applicable to white people, and consequently the aged and infirm have not that claim upon individuals of their own color and family connection to guarantee them the means of prolonging an inactive and dependent life. The want of the necessity for acclimation is one favorable health consideration the negroes of the South have over the whites, and especially all white immigrants from more northern localities, both from this country and Europe. Being native and, as it were, to the *manor* born, besides the race advantage, above alluded to, of being susceptible only to a limited extent to the injurious influences of malaria, they do not have to undergo a period of acclimation in order to habituate themselves to climatic conditions peculiar to malarial districts, and consequently the severe types of malarial fevers which are so debilitating and, indeed, fatal, to whites equally exposed, affect them comparatively very little.

From twenty years of professional experience in the South, the greater portion in a malarious district, and ten years of which in charge of the City Hospital at Memphis, I do not recollect seeing one case of what is recognized as "malarial hæmaturia" in the negro. Many negroes, both men and women, were admitted into this hospital, both from the city and the country immediately adjacent in Tennessee and from the river plantations in Mississippi and Arkansas. Nor have I ever treated this type of malarial disease in a negro in my private practice, or known of any such cases reported by others, either in the local medical societies or in the medical journals. As this disease, which is the result of an intense malarial poisoning, a toxæmia, has of late years been the subject of frequent discussion in our local societies, and several articles have appeared in Southern journals treating of it, in neither of which are cases among the negroes mentioned, the opinion is admissible that, if the race is subject to it at all, it is to a very limited extent in comparison with the white race. The high negro mortality of Memphis, therefore, cannot be attributed to those climatic conditions which are supposed to affect white people injuriously, especially new-comers from higher lati-

tudes. Negroes, as a class, are decidedly a gregarious people, and when left to themselves are exceedingly negligent in their personal hygiene and domestic sanitary surroundings. Memphis being located in an exclusively agricultural country, in which negro labor largely predominates, becomes the centre of a very large negro population, and while the death-rate in the city exceeds, and will continue to exceed, the birth-rate, this population will increase as it is recruited from the surrounding country. Being also a railroad as well as a commercial centre for an extensive area of country in Tennessee, Mississippi, and Arkansas, a larger floating or transient population is brought to it by river and rail than to most cities of its size. From these circumstances it has attracted to it throughout the whole year, especially during the winter months, a large negro population which has no fixed home in either city or country. Many of this class, employed on steamboats, railroads, and plantations within its commercial radius, have temporary homes, or rather find abiding-places in the city, and come to it, if possible, when sick. The negro element forms a larger proportion of this transient population, which does not properly belong to the city, than does the white element, and for which it is difficult to fix a correct status of citizenship or term of residence in compiling mortality tables, and contributes very perceptibly to the death-rate of the city.

Of the 779 deaths reported for the first nine months of 1882, 520 were negroes and 259 whites; 69 of the former and 38 of the latter were known to have been residents of the city less than one year, and are so recorded, — the term of residence varying from a few days to a few months. These figures of non-residents are below the proper number for both white and black, especially the latter; undertakers being negligent, in the certificates of death, as to the period of residence, and, in many instances, especially with negroes, being unable to obtain satisfactory information on this point. The same prejudicial influences to the general health or longevity and natural increase of the negro race do not exist in the country as in the city. Their mode of life in the country is more primitive and much less changed from that of the old régime, which, with all its objectionable features, both from a political and social point of view, was well calculated to preserve the physical health of the race and favor its natural increase.

Many reasons can be assigned for this, chief of which was, there being a property interest involved in them; the better the standard of physical development and health preservation maintained, the greater was their pecuniary value. Equal facilities for the licentious indulgence of the animal instincts between the sexes did not exist then as now; consequently venereal diseases were much less frequent, and when they did occur, this, like other sickness, was treated by what was considered the best available medical skill, — at least the owner retained the same physician for his negroes that he did for his family. Negro children born in the country under these circumstances, were seldom, if ever affected by hereditary syphilis or affections developing from this disease.

The large number of still-births and deaths from premature births among this class, the latter of which enter into the present death-rate of Memphis, is attributable to a licentious mode of life, an improper management of labor, and care of the child during the puerperal period by ignorant negro midwives. Negro women in cities are not so prolific as those in the country, for these and other reasons pertaining to their social life, which are not conducive to a natural increase. The negro population for the last decade, — that is from 1870 to 1880, — for the whole country, exhibited, by the United States census, an increase which surprised many who predicted that under the changed order of things, the death-rate would so near equal the birth-rate that the increase would be merely nominal, if at all. This, no doubt, would apply to some cities, provided the birth-rate was the only source of increase. The births reported at the Memphis Health Office for 1881 were, white, 319; black, 294; for the first nine months of 1882, white, 261; black, 216. This is not correct; it falls short in both cases. It is difficult to enforce the ordinance requiring these reports to be made. Physicians are frequently negligent without intending to wilfully violate the ordinance requiring such reports; and many negro women who act as midwives are not only thoughtless, but ignorant of the requirements; consequently births may and do occur without the knowledge of the health authorities.

These statistics, however, are sufficiently accurate to justify the opinion that if the birth-rate of Memphis were the only source of increase to the negro population, with its present death-rate there would be a marked decadence within the period of ten years. But the growth of cities generally, both in this country and in Europe, is not sustained alone from the natural increase of their own immediate population, but from other points.

With the present status of organized State medicine and deficiency for the proper registration of vital statistics in many and perhaps all the Southern States (with perhaps the single exception of Alabama), where a study of the negro question is most interesting and of most practical importance, not much more can be determined than a general opinion from personal observation, election returns, the public-school reports, and the United States census, which is taken only once every ten years. These sources do not give specifically the causes of decline and increase in different localities. Statistics, to be of real value for this kind of study, should be comprehensive in scope and specific in detail as to character, and mathematically accurate. In Tennessee, outside of a few towns, no such vital statistics are kept. The law passed by the last Legislature looking to the proper registration of births, deaths, and marriages, and other points of interest connected with the vital statistics of the State, being defective, proved practically of no value. An effort will be made at the next session of the Legislature to secure such amendments as experience has proved to be necessary.

As far as my observation goes, and from what statistics I have studied on the subject, the two epidemic diseases which have proved most fatal among negroes, both in the city and country, are cholera and small-pox.

They have yellow fever, though not so susceptible to it as whites, nor is it so fatal with them. The cholera epidemic of 1866 and 1873, as far as it went, which was limited in comparison with that of 1866, proved very fatal to negroes in Memphis and vicinity. This I attributed to their mode of living, improper food, overcrowding, irregular habits, and a general disregard as to their individual hygiene. During the existence of small-pox its prevalence among them is due to the same general causes and the want of vaccination. Of the 338 cases of small-pox which occurred in Memphis from January 1st to October 1st, 1882, 311 were negroes and 27 white. This is exclusive of the cases put off of steamboats and brought into the city from the adjacent country to be sent to the county pest-house, all of which were negroes.

From 1868 to 1873 I had charge of the small-pox hospital, which at that time was under the same administration as the City Hospital above alluded to. The admissions from the negro population largely exceeded those from the white, and among these the confluent type of disease was the rule, as was the case last winter and spring in and around Memphis. This will continue whenever small-pox prevails until the negro population is as thoroughly protected by vaccination as the white; which will never be, unless by compulsion, they as as a class not properly appreciating its necessity as a protective measure, and being indifferent as to its consequences. At present there is no compulsory vaccination law in Tennessee; and if there were, with the present public health service organization, it could not be effectively enforced. To effect a public vaccination as far as practicable, two years ago, through the city Board of Health at Memphis, and last winter through the State Board of Health at Nashville, I resorted to the expedient of having an order issued by the Superintendent of Public Instruction that no teacher or pupil should be enrolled or allowed to attend the public schools who did not exhibit evidence of successful vaccination. In Memphis this expedient was attended with good results. The Board of Health, with the coöperation of the School Board, through its Superintendent, enforced this order, and a large percentage of the community, who would have been otherwise negligent, was thus protected. As a public health official I have despaired of effecting a thorough vaccination among the negro population by moral suasion alone. Vaccination, as a public health measure, to be made sufficiently general to be thoroughly protective to a community requires the authority of law adequately administered; and ample facilities for having it done should be placed within the reach of all.

Under like favorable circumstances, outside of the artificial life of cities, through that whole area of country designated the South proper, embracing the South Atlantic and Gulf States, and the States from North Carolina west, with the exception of some areas within these States, the natural increase of the negro race will equal, if not exceed, that of the white. In all the attributes of animal nature the negro is at least the equal, if not the superior, of the white race; and as the natural increase depends

upon those forces, under like favorable circumstances as to climate and hygienic influences, the negro race will lose nothing in comparison with the white as far as natural increase is concerned. That a preponderance of population in favor of the negro race will ever result, except over some areas which are simply propitious for it from natural climatic influences, is not probable. The addition to the white population from immigration is constant; whilst the flow of the negro population from country to city, where, for reasons already given, its increase being impeded, will check its growth. It is reasonable to assume that with the development of State medicine, which now has an impetus it never before had, the general health conditions of the negro race will be improved as well as the white, and, as a consequence, its increase facilitated. Epidemics from any disease may become less frequent, and when they do occur, more circumscribed and of less duration. What are termed the endemic fevers of the South do not affect the negro race as prejudicially as the white. All that extensive area known as the bottom lands of the Mississippi river and its tributaries, the cotton country, perhaps the richest agricultural district of the same extent in the world, with its present sanitary status and natural climatic influences, is more favorable to the negro than the white race. That this whole area can be reclaimed and made as healthful for the white as the negro race is, in my opinion, a question of experiment in local sanitation and improved methods of living which are in process, and time will develop.

The negro race, as a political and social factor in this country, is now undergoing a test of civilization it has never before had, and I think, by reason of its innate hardiness and natural imitative instincts, which will compensate to some extent for its mental deficiencies, will develop an adaptability in its changed status toward the white race, and insure it a vitality as a distinctive race, which many, some years ago, were unwilling to admit. In support of this I refer to the relative rate of increase of the two races as exhibited by the United States census for the last decade. The per cent. of increase for the total population from 1870 to 1880 was 30.08, — for the white, 29.20; colored population, 34.67. To show the relative increase between the two races in the South, I take from the last official census the three Southern States, — Tennessee, Alabama, and Mississippi, — which may be accepted as a fair criterion for the remainder of the South. Rate of increase in these, taken as one State, for white population, 23.90; for negro, was 33 per cent. The negro increase is much more apparent in South Carolina, which is less affected by immigration from other States, and shows more accurately the natural increase. There it is 45.33, and for the white population, 35 per cent. These figures are from the *American Almanac* for 1882, compiled "from the official returns of the tenth census, 1880."

With many objectionable social features of the race in its present crude state of civilization, I think there is one which will favor its preservation as a distinct race and retard further amalgamation. The increase of the mulattoes, or half-breeds, will be less than formerly in proportion to the

population. As crude as the social status of the negro race is, it at least has a recognized social caste, and its changed status before the law — the recognition of individual rights and individual responsibilities, together with this distinctive social cast — will prevent to a marked degree a miscegenation of the two races. Marriage between the whites and blacks is so rare it may be left out of consideration; but marriage between the full-blooded negro and mulattoes is very common.

The offspring, the result of this union, would go back nearer to a pure negro stock. The illicit intercourse or temporary liaison between the two races is, as a rule, not as productive of issue as a legitimate union, and, for reasons above given, is not very common. The offspring of such a union being illegitimate will bear a very small proportion in comparison with the other.

However this may be, I think, as a matter of fact, there are not as many half-breeds born now as formerly; at least, this is my observation, and seems to be the prevailing opinion of those with whom I have conversed, though I have no statistical information on the subject. I think, moreover, that this mulatto class, which partakes anatomically and physiologically of both races, being hybrid, is not as prolific or hardy as either distinct race, and, if uninfluenced by either, will not preserve itself indefinitely as a distinct class, but in a few generations will disappear.

PROCEEDINGS AND DISCUSSIONS AT THE TENTH ANNUAL MEETING,

HELD AT

INDIANAPOLIS, INDIANA, OCTOBER 17–20, 1882.

TUESDAY, October 17, 1882.

The Association convened at Park Theatre, and was called to order by the President, Prof. R. C. Kedzie, at 10 o'clock A.M.

The PRESIDENT. — The meeting will be opened with prayer by Rev. E. A. Bradley, of Indianapolis.

Rev. Mr. BRADLEY. — If I may be allowed, before reading the word from the New Testament, I would like to call the Association's attention to the fact, quite significant in my mind, that you are gathered together upon the eve of the day that has been kept in honor of St. Luke by the Christian Church from its early days. St. Luke was the great physician and evangelist, and it struck me as quite significant that your meeting should be gathered upon such a day; and in that spirit I will read a few words from the fourth chapter of St. Matthew.

Prayer by the reverend gentleman followed the reading of Scripture.

The PRESIDENT. — The Association is now ready for business.

The SECRETARY (Dr. Azel Ames, Jr., of Massachusetts). — Mr. President, I am desired by the Local Committee to announce that the courtesies of the Western Union Telegraph Company have been extended to the visiting members of the Association for social messages. Upon presenting telegraph blanks, franked by the Secretary, they will be passed free over that line. I am desired, also, by the Executive Committee, to make the announcement that there will be no afternoon session to-day, but that the morning session will not adjourn until 2 o'clock, and then will adjourn until the evening session at 7.30 P.M. I have to request all members, who have papers which they propose to read, to present them as early as possible to the Secretary, for review by the Executive Committee, under the rule. Proposals for membership may be made out upon blanks which lie upon the table in front of the chair, and should be endorsed by two members of the Association, and handed to the Secretary. In behalf of the Executive Committee I am directed to report in regard to the vote for the incorporation of the Association, passed at the ninth annual session, that "Upon the vote of the Association directing its Executive Committee to secure an act of incorporation," the committee reports that, acting upon the instructions of the Associa-

tion, it appointed a sub-committee of three to consider the whole subject-matter, and report its conclusions and recommendations to the committee. That sub-committee, and the Executive Committee itself, after examining the laws of the several States and of the United States, were unanimously of the opinion that the laws of the United States offered the best facilities for incorporation for a body like this; and the sub-committee were directed to procure such Act. They have reported progress, and desire further time, and the Executive Committee therefore asks from the Association farther time for the prosecution of its work.

The PRESIDENT. — What is the pleasure of the Association upon the report and recommendation of the committee?

On motion, the report was accepted by the Association, and further time granted the committee.

The SECRETARY. — Mr. President, I am directed by the Executive Committee to announce that that committee has directed the President to fill such vacancies as shall occur during the meeting of the Advisory Council by members who are present; if possible, from the States from which the vacancies occur; and the committee asks the approval of this order by the Association.

On motion, the action of the committee was concurred in by the Association, and the President authorized as proposed.

The SECRETARY. — I am further directed by the Executive Committee to present the following resolution: —

Resolved, That the Executive Committee recommend to the Association the repeal of the resolutions adopted at its Third Annual Session at Baltimore, Nov. 12, 1875, as published on page 552 of Volume II. of the Transactions, to wit: —

Resolved, That in view of the fact that the funds of the Association are insufficient to publish in full all the papers presented, the President shall appoint two members, who, with the Secretary, shall constitute a Publishing Committee.

Resolved, That it shall be the duty of this committee to examine the papers presented to it by the Secretary, and to decide as to which shall be published in full, and which in abstract, or by title only.

The SECRETARY. — The recommendation of the Executive Committee is for the repeal of these resolutions, as passed at Baltimore.

The resolution as reported by the committee, through the Secretary, was adopted, and the resolutions of Nov. 12, 1875, thereby repealed.

The SECRETARY. — Mr. President, reports from committees are now in order. The first special committee report in order is that from the Committee on the Prevention of Venereal Diseases, — Dr. Gihon, U.S. Navy, chairman.

Dr. A. L. GIHON, U.S.N. — Mr. President, the committee would like to be permitted to report to-morrow, or next day. Some members of the committee are not here as yet, and, although the report is almost ready, still we prefer to wait until they have arrived. It may be there are one or two members who do not concur in the majority report, and we would prefer to wait.

On motion, the Committee on Prevention of Venereal Diseases was granted further time to report.

The SECRETARY. — Mr. President, the next committee is the Committee on Vital Statistics.

Dr. E. M. HUNT, of New Jersey. — Mr. President, I happen to be the only member of that committee present. I have a letter from Dr. Snow, of Rhode Island, expressing his regret, and Dr. Elisha Harris, of New York, chairman of that committee, is expected. I think I shall have to ask that the making of the report by this committee be postponed. If the chairman should not arrive, a brief report will be made by the only member of that committee present.

On motion, the Committee on Vital Statistics was granted further time to report.

The SECRETARY. — Mr. President, the next committee report in order is that from the Committee on Management of Epidemics, — Maj. W. T. Walthall, of Alabama, chairman. I will state that I have received, within a week, a communication from Pensacola, by which I ascertained that the chairman of this committee is engaged in relief work there, and by that, I suppose, is prevented from being here. He wrote me that he expected to have his report here; but probably he has been prevented from doing so. I move, therefore, that the report of that committee be postponed until a later hour in the session.

The motion was agreed to.

The SECRETARY. — Mr. President, the next committee report in order is that from the Committee on Compulsory Vaccination; Dr. James H. Letcher, of Kentucky, chairman.

The PRESIDENT. — Dr. Letcher is not here. Is there any member of that committee present? There seems to be no member of the Committee on Compulsory Vaccination present.

The SECRETARY. — I move, Mr. President, the report be postponed for the present.

The motion was agreed to.

The SECRETARY. — The next report in order, Mr. President, is that of the Committee on Cattle Diseases, — Edward Fenner, Esq., of Louisiana, chairman.

The PRESIDENT. — Mr. Fenner is not here. The next member of that committee is Dr. J. H. Rauch, of Illinois, who is present.

Dr. J. H. RAUCH, of Illinois. — Mr. President, in view of the absence of the chairman of the committee, I would ask, on behalf of the committee, further time to make report.

The motion was agreed to.

Dr. J. S. BILLINGS, U.S.A. — Mr. President, I move that further time be granted to all of these committees. None of them seem to be ready to report. I make that motion. Let the Secretary proceed with the call, and such as are not ready be granted further time by consent.

The motion was agreed to.

The SECRETARY. — The next report in order, Mr. President, is the

report from the Committee on National Museum of Hygiene; Dr. Gihon, chairman.

Dr. Gihon, U.S.N., chairman of the committee called upon, submitted the report. (See Reports of Committees.)

The President. — What is the pleasure of the Association on the report of the Committee on National Museum of Hygiene?

Motion was made that the report of the committee be received and adopted.

Dr. Billings, U.S.A. — Mr. President, I wish to say one word in regard to the motion, and upon the report of the committee. I exceedingly regret to see in the report, even by implication, — although I think it is unintentional, — any attempt to depreciate the work of another department; and the allusion to the library work of the Surgeon-General of the Army will be construed as somewhat sneering in its character; and I think it is undesirable in a report of this kind. We wish to have a Museum of Hygiene, and it is well placed and under excellent management; but I do not think we wish to antagonize in any way the work being done by other departments of the Government. We do not want to have the matter put in such shape as to appear, or make Congress suppose that the two interests are in any way incompatible. The library of the Surgeon-General's office has all the books on hygiene. It has all the journals. Its reference library is part of the great national collection, and it has been of great benefit to every one who comes to it. Whether it is claimed that this library will loan books out over the country or not, I do not know. I hope it will. If it does it will fill a field which the other library cannot; but I regret to see anything like antagonism in the report, and I wish to see that allusion expunged from it. As I stated, I think it is unintentional.

Dr. Gihon. — Mr. President, Dr. Billings calls my attention to something which I did not think of at all. The particular feature of this library is that the books are loaned out; and in making the remark in the report the committee did not have reference to any other library; but simply that these books were to be loaned out over the country, under suitable guarantees.

Dr. Billings. — Mr. President, that is precisely what the report of the committee does not say.

Dr. Gihon. — Mr. President, the report simply says you are not to be content with looking at the catalogue. I will be very glad to alter the expression, and will modify it, if I am given a moment or two. I will alter that sentence so that it will read that the library is not expected to simply grow by thousands of volumes, and remain unread, but they are to be loaned on application, under proper guarantees.

Dr. Billings. — Mr. President, that will be entirely satisfactory.

On motion, the report, as amended, was received and adopted.

Dr. Gihon. — Mr. President, I would like to make one other explanation in regard to the Laboratory. All the apparatus of Burden-Sanderson, of London, has been obtained, and every experiment can be performed.

It is understood that every member of this Association can go there and use this apparatus without any cost to himself or the Association; and any other apparatus desired or suggested will be obtained and added to the Museum. The purpose is to make this one of the prominent features of the Museum.

Dr. O. W. WIGHT, of Michigan. — Mr. President, I would ask for the reading of the report as amended. I think it is in order.

Dr. GIHON. — Mr. President, I have just stricken out the sentence objected to, so that that part of the report will read: —

It is not proposed that the Museum shall be a cabinet of curiosities, hidden behind glass cases under lock and key. It is to be a working-place, where every student may see and handle, and its books are collected that they may be read by the greatest possible number.

The SECRETARY. — Mr. President, the next business in order is action upon the proposed amendments to the constitution. The first amendment was proposed by the Secretary, in 1880, and now lays upon the table. It will be found printed in the large circular of the Association, which has been distributed among the members, and is as follows: —

In Art. III., at the beginning, introduce the words, "The members of this Association shall be known as Active and Associate. The Executive Committee shall determine for which class a candidate shall be proposed. The Active members shall constitute the permanent body of the Association, subject to the provisions of the constitution as to continuance of membership. The Associate members shall be elected only for the year for which they are proposed, and shall have all the privileges and publications of the Association; but shall not be entitled to vote. They may be reëlected."

In Art. III., in the first line, after the word "the" and before the word "members," insert the word "Active," so that the line shall read "the Active members shall be selected with reference," etc.

In Art. III., last line, insert the words "in either class," after the word "membership," so that the sentence shall read "The annual fee of membership in either class shall be five dollars."

In Art. VIII., in the last line but one, strike out the words "six weeks," and insert the words "one week," so as to read "at least one week preceding the date of such meeting."

The PRESIDENT. — A motion to take the proposed amendment from the table will be in order.

Dr. BILLINGS, U.S.A. — Mr. President, I move that this first series of amendments, being those proposed by Dr. Ames, of Massachusetts, be taken from the table and placed upon their passage before this Association.

The motion was agreed to.

Dr. BILLINGS, U.S.A. — Mr. President, I think it may be proper to state, as briefly as may be, the object with which this amendment has been prepared. When this Association commenced its existence, ten years ago, it commenced with a small membership, — so small, in fact,

that for two years it was impossible to get together a quorum, so few were the members, and so scattered over the country. The original intention of the Association was to gather together those who were practically engaged in sanitary work, and those especially interested in it, for conference, for the purpose of discussing their various difficulties, for the purpose of taking counsel with each other, for the presentation of papers, and for the advancement of sanitary science. Gradually the interest in the subject of public health, and of preventive medicine, has grown in this country. It is becoming a fashionable matter almost. Our meetings have grown larger from year to year. The influence of the Association has become greater and greater, and the effect of its opinions, as expressed upon public health, has been more and more important; and there is no doubt that it will continue to grow in this direction. With this large increasing membership come certain difficulties. In the first place, in meeting in any large city there is always a large number of gentlemen in the city who take a very general interest in the progress of sanitary science, who are glad to have the Association meet there, and who are willing to extend hospitalities, and very glad to attend the meetings, but who have neither purpose nor wish to become permanently allied with the Association, or pay their dues for any term beyond the current year. In consideration of this matter it has seemed to me, and to a number of the older members of the Association, that the best way to adjust it is to adopt the plan of associations of its class, and have two classes of membership, the first being permanent members of the Association, which will include all those who are now members of the Association, and such others as may be hereafter elected, who will be expected to remain as members of the Association and pay annual dues, and contribute papers, and perform other duties in its work; the other class being those who may choose to present themselves for the single meeting only. They are to have the privilege of attending the meetings and hearing the discussions, and receiving, as a memento of the meeting they have attended, the volume of transactions containing the papers read, and the discussions upon them. They need not feel, and will not feel, under any obligation to attend future meetings, or to pay future dues, and will not be troubled by our energetic Secretary with his little letters of reminder. It was considered two years ago that the time had come to make this change, and this amendment was introduced at New Orleans, in part at my own suggestion. I was not able to be present at Savannah at the last meeting, which accounts for the fact that it has remained on the table until this time.

The PRESIDENT. — Are there any further remarks upon the adoption of the amendment? If not, the Chair will put the question.

Dr. HEWITT, of Minnesota. — Mr. President, the second sentence of this proposed amendment reads in this way: —

The Executive Committee shall determine for which class a candidate shall be proposed.

Now, a person comes here and desires admission as a permanent member of this Association. It seems to me that if the constitution should specify, in specific terms, any one thing, it ought to specify exactly what are the terms of membership, and it ought especially to specify what are the terms of permanent membership. But, if you will refer to the terms of the proposed amendment, you will see that it provides that the Executive Committee shall determine the class to which the candidate shall be proposed. The class for which a candidate shall be proposed is left practically in the hands of the Executive Committee of the Association; leaving practically in the hands of that committee all the specifications, all the requirements for permanent membership. The active members, it is proposed, shall constitute the permanent body of the Association, and the associate members shall be entitled to all the privileges and publications of the Association, except that of voting in the determination of its policy. Now, as one of the original members of the Association, I have watched its progress with as much interest as any one else, from its beginning, and I was under the impression that it was intended as a popular Association. That it was not merely for the purpose of bringing together men who made a special study of sanitary science, that they might compare their difficulties and agree upon methods of work; but that it was intended, by means of inclusion, to educate the people up to a sense of what sanitary science could do, and what each individual member of the community should do, to make sanitary science a living reality where he lives. The effect of this amendment will be to destroy its popular character, and to confine it to an Association of men who are actively engaged in sanitary work, and whose qualifications in sanitary work shall meet the approval of the Executive Committee, for the time being. The first objection, then, that I make to this proposed amendment is that it destroys the popular character of the Association; but the most essential, and, it seems to me, the most serious, objection which can be made against it is one which the amendment makes for itself, — that it refers the qualifications for permanent membership to the decision of the Executive Committee for the time being. On these grounds I am opposed to the adoption of the amendment.

Dr. A. N. Bell, of New York. — Mr. President, for the most part I decidedly agree with the last speaker. I go farther, and disagree with the propriety of passing this amendment at all. I think, if we undertake to discriminate as to the qualification of members, we will, in so far, weaken the force of this Association everywhere. I do not believe that the same inducement to membership will exist that now exists. I believe that some such qualification as that adopted by the American Medical Association would be proper. All members should be equal and have equal rights in this Association so long as they show interest enough in it to pay their dues and attend the meetings. I think that is the best and strongest ground we can take; and if it were added, or made a part of the terms of admission, that when a person had not paid his dues for a certain period, it should then be considered that he was no longer a

member of this Association, I think that would be quite force enough. I think the moment we undertake to say to any one, "You are only an associate member; you come in for the sake of your sustaining presence and your five dollars; and just so soon as we get your money you can take your departure," we not only turn and destroy the purpose of the Association so far as education throughout the country is concerned, but it will seem to show a desire to get strength from sources that we do not rely upon. I think every member who will pay his dues, and will come to the annual meetings of the Association, is entitled to equal rights with every other member of the Association, and I am therefore opposed to the amendment *in toto*.

Dr. Moses T. Runnels, of Indiana. — Mr. President, within the last few days I have been trying to work up a local membership for this Association here in Indianapolis. I was told that the Association wanted a large number of influential citizens to become members, and I have been trying to induce my friends throughout the city to do so. They asked me, "What are the advantages of the Association?" I was told by a representative of the Executive Committee that all these persons could only be admitted as associate members; and I so explained to them. The next question they would ask me then was, "What does that mean?" and I have found it very difficult to explain. They refused to become members. I could not work up a local membership here among my friends. They would not become associate members; and I am confident the amendment will be found to be a stumbling-block in the way of this Association, if it is adopted. I do not think it will work for the general good of the Association. I know I could not make it work here.

Dr. Hewitt, of Minnesota. — Mr. President, suppose this amendment is adopted this morning, what will be the effect upon those who apply for membership at this meeting? Will the amendment go into operation immediately upon its adoption, and will it be operative upon members who apply for membership at this session?

The President. — If it is adopted, it will go in force at once, as a matter of course.

The Secretary (Dr. Ames, of Massachusetts). — Mr. President, as the mover of the amendment proposed, although it did not originate wholly with me, but was a matter of conference with Dr. Billings and several older members of the Association, it is proper that I should say a few words. The facts were so well stated by Dr. Billings as to what might occur, and what were the natural results and tendencies in an Association of this kind, that no more on that subject, perhaps, need be said; but a brief consideration of what the actual history of the Association has been and is, is worth something in coming to an understanding of this matter. It is a practical and undeniable fact that the great body of the Association each year has been composed of those who did practically make themselves associate members, such as this amendment contemplates, and nothing more. It is the fact that at Nashville, at New

Orleans, at Savannah, and at other places, large numbers of people of those localities, for the sake of exhibiting their local interest in the work of the Association, and of testifying their readiness to help it forward (at least for so long a time as it should be active in their proximity), have made themselves members of this Association, paid their five dollars, contributed that amount of material help, and added their names to the list, and thereby added the moral support of their backing to the Association. The fact is that a large percentage of the membership of the Association have joined in that manner, and at the end of two years have failed to pay their dues, which causes their membership to lapse, and they have passed from membership; so that their membership was ephemeral, and shows that they were willing to place themselves in just such a position as this amendment places them. My friend from New York (Dr. Bell) made a suggestion that we ought to make some such regulation as we have in the American Medical Association. We do exactly so. That is just what this is. Members of the American Medical Association retain their membership only so long as they pay their dues, and none of them have the right to vote unless they are delegates. It is the delegate who votes, and not the member. The permanent members here are the working force, as the delegates are in the American Medical Association; and the associate members are as the regular members of that Association when they pay their dues. It is the same relationship that exists in the Medical Association. The member of that body is really not a ruling member if he does not vote, and he does not vote unless he is a delegate. Neither should the associate membership here, although it be a large volume, constitute the working force of this Association. So it seems to me there is a parallelism between the plan of the amendment and the present organization of the Medical Association. We only seek to adjust our constitution so as to give us a line of safety; while at the same time we still retain all the strength and help which the people of the different localities have ever shown themselves so ready to give us.

Dr. HUNT, of New Jersey. — Mr. President, I beg to draw attention to a point raised by the gentleman from Minnesota (Dr. Hewitt) as to the effect of this amendment to the constitution. It is true that this body intends to be both a scientific and a popular body. It does not, on the one hand, propose to be so purely scientific as to exclude a kind of membership variously interested in sanitation; nor, on the other hand, does it intend to become so intensely popular as to be a promiscuous mass meeting. We are not at all changing the original design of the Association in this amendment. The original design of the society is very apparent from the wording of the constitution. I rise merely to draw attention to the third Article, which is as follows: —

> The members shall be selected with special reference to their acknowledged interest in, or devotion to, sanitary studies and allied sciences, and to the practical application of the same.

Then it goes on to say: —

Each candidate for membership shall first be proposed to the Executive Committee in writing (which may be done at any time), and with a statement of the business, or profession, and special qualifications of the persons so proposed.

Now, the gentlemen who formed this constitution were not in doubt as to what they meant by this; and, so far from this amendment being a departure from the original design of the Association, we are merely carrying it out. It will not prevent it from being popular in the sense it was designed to be popular. The Secretary (Dr. Ames) has very well stated what has been the practical working of the Association heretofore. Notwithstanding the provision of the constitution it has been a popular Association, and it is only necessary to guard it, so that its meetings shall not be merely a meeting of men which shall give a certain amount of loose information to the public; but that it shall be technical and scientific information, as well as practical and popular; at the same time having sufficient of a popular and democratic element in it to enable it to have a large attention. It is because of this that I find myself, for one, inclined to favor the proposition of changing the constitution by the adoption of the proposed amendment.

Dr. Gustavus Devron, of Louisiana. — Mr. President, appreciating the motives that actuate the members who are in favor of the amendment, I cannot see that we do not accomplish the same result by leaving it alone. A member who does not wish to be a permanent member, by abstaining from paying his dues, *de facto*, ceases to be a member. The remedy, if a remedy is required, is to be obtained in the election of the candidates proposed for membership. Dividing them into classes will not improve the matter. A man may be elected as a permanent member and may be unable to continue to do any more than send his five dollars, if he even does that. The fact is, the best thing we can do is to elect members for their constitutional qualifications; that is, for "their acknowledged interest in, or devotion to, sanitary studies and allied sciences, and to the practical application of the same," alone, and leave it with circumstances and themselves to select the rank they wish to occupy, whether it be permanent or temporary in its character.

Dr. T. P. Wilson, of Michigan. — Mr. President, there are a good many objections that come to one's mind in looking at the proposition before the house. I do not care to discuss it. I propose, however, to call for a test vote, and therefore I move the indefinite postponement of the motion before the house.

Dr. Billings, U.S.A. — Mr. President, the motion of the gentleman from Michigan (Dr. Wilson) does not meet with a second. Before it is seconded I should like an opportunity to reply to one or two of the objections against the amendment.

The President. — We will hear Dr. Billings.

Dr. Billings. — Mr. President, the original objects of this Associa-

tion, as stated in the constitution, are "the advancement of sanitary science, and the promotion of organizations and measures for the practical application of public hygiene." And it says, "The members shall be selected with special reference to their acknowledged interest in, or devotion to, sanitary studies and allied sciences, and to the practical applications of the same." Under that constitution, as it exists, if the Executive Committee do their duty, as required of them, they can only select such men. There is no place for the very many men, that our experience has shown us are in every city, who will be glad to come in and testify their interest in the Association, by attending the meetings and receiving the publication and subscribing for that meeting only. It is to make provision for that class of gentlemen, which we have found to be very large, and to give the Executive Committee power to draw the line hereafter in the selection of those who are to be the working-members of the Association, that the amendment is proposed; that committee feeling that there should be some care exercised in the selection of those members whose votes, upon questions of public polity and public interest regarding the public health, are to be taken as the expressed views of the sanitarians of this country. It is to give the Executive Committee the power of doing that, and, at the same time, not requiring them to thrust aside, or refuse admission to, a very large number of gentlemen who take an interest in our work, whom it would be very desirable to have associated with us, and yet who cannot come in under the present requirements of the constitution. In regard to the fact that the Executive Committee have the power, under the amendment, to indicate what class the members shall belong to, that is the power the Executive Committee has now. That is, they have the entire power of deciding whether a candidate shall be elected to the Association or not. The question, as to the power of the Executive Committee and as to the policy of changing it, comes up on another amendment, which follows this. That is an entirely separate and distinct question, as to what the powers of the Executive Committee will be. If a gentleman simply applies for the associate membership under this amendment, — should it be passed, — I presume there would be no question about it. Certainly the Executive Committee are not going to force him to become a permanent member. If he applies for permanent membership, then the question of his qualifications for membership comes up. This amendment simply leaves that matter where it is now, — in the hands of the Executive Committee, — to determine whether he shall come in upon that basis or not. I think all of us must feel that there are certain dangers to the Association, under the existing condition of things, if the doors are to be thrown widely open, and it is generally understood that every one who wishes to come into the Association can do so by simply presenting his name and paying his five dollars. That is the question, if the enforcement of this clause of the constitution is given the go-by. We have been very lax for the last four or five years; very few rejections have been made by the Executive Committee. But in the future, — I say nothing whatever of

the past or present, — but in the future there lies a certain danger. As I said, a while ago, hygiene is becoming popular. It is becoming fashionable. It is becoming a good means of advertising; and it is possible that efforts may be made to use this Association, for local and individual purposes, in a manner which those interested solely in the progress of sanitary science would be extremely unwilling should take place. I believe the management of the Association, its expression of opinion upon matters of public health, and the advice to legislative authorities, municipal, State, and national, which it gives at every meeting, should be given only by those who are competent to give such advice, and by those whose opinions will command respect, in order that the formally announced resolutions of the American Public Health Association may have the weight and influence that they should have in our legislation.

Dr. T. S. Verdi, of Washington, D.C. — Mr. President, I was extremely surprised to hear Dr. Billings express himself as of the opinion that there is danger of this Association becoming too popular. It is very surprising to be told, by a man who loves knowledge, that there is great danger of an institution of this kind becoming too popular, and that our people may become fashionably hygienic. I hope to God the day will soon come when every man and woman in the country will become a professor of hygiene, whether they learn it at this institution or any other institution. If there is one great thing, one good thing, that this institution has done, it has been to popularize hygiene. I hope its noble work may continue, and that it may not be restricted by any arbitrary provision of this kind. We are republicans in this country, and catholic so far as knowledge and science are concerned, and the American principle is, no taxation without representation; and this seems to me one of those cases in which there is with equal taxation unequal rights. The Executive Committee has already a very great power, — a power that very few similar institutions of this character have given their Executive Committee. Now it is proposed that this Executive Committee shall decide upon the qualifications and grade, as we might call it, the knowledge of a person. A gentleman applies to become an active member of this Association. He loves its work, and likes to come here and learn, to enable himself to become quite as great a man as some of those who are here now. He is willing to contribute, and spend his money and his time; but when he goes before this august body, called the Executive Committee, he has to submit his qualifications like a school-boy who goes to school, and be graded as a member of this body, whether he shall have 100°, or 90°, or 80°, or 70°; or, if he is a very bad boy, only 50°. This committee is to tell that man that he is not qualified to be an active member; that he may be qualified to be a member of an inferior quality, for which he has the privilege of paying five dollars. The constitution has already said what is required of an active member, — what qualifications he shall have. It would be proper, if you want to classify him, to state what qualifications, or rather what want of qualifications, a man shall have to be an associate member. Of course, that degree would

come from the Executive Committee, to the great mortification of the applicant. If you want to make this Association unpopular, if you want to restrict it to a few learned individuals, then it is not proper to call it the American Public Health Association. I do not know that I have anything more to say, except that I hope this un-American amendment will not be made.

Dr. GIHON, U.S.N. — Mr. President, there is a single point that occurs to me. The prominence of an Association of this sort, its permanence and its vitality, depend somewhat upon its individuality. It must be a characteristic entity. It must not be a chameleon, changing its colors from time to time, advocating this thing this year and that thing the next year. Now this Association can have no determined fixed policy if it is going to change its membership from year to year. Dr. Verdi has suggested that we are trying to restrict the membership to a few learned individuals. Now, as I understand the purport of this amendment, it is to widen its sphere of usefulness and to admit all persons, particularly those who do not come under the present constitutional restriction, — to admit everybody to the advantages of the Association; but not to give those persons who are simply accidental visitors, or temporary associates, the power of reversing what the Association may have sent forth to the world as its determined policy. Now, for instance, suppose we should meet some year at Sitka, in Alaska. Now, in Sitka they have a liking for Hootchenoo. The probability is the whole membership of this Association would conclude Hootchenoo was a very bad thing; but suppose some Hootchenoo-maker would fill the Association with his friends, and when it came to be voted upon whether Hootchenoo was a good or a bad thing, it would be pronounced good. And, again, it might be possible we should meet in a particularly favored city, where, my friend, syphilis was unknown, and when the Committee on Venereal Disease should propose a law, which they expect to do, these people might bring in all their votes, and they, knowing nothing of the evils of this dreadful disease, when the matter came to a vote the decision of the Association might go forth condemning this measure, which all sanitarians acknowledge to be good and proper. If we are going to have any fixed individuality, or entity, which shall have character over the world, we must do something of the sort proposed in this amendment, and not permit our membership to keep changing, and thereby changing our coat from year to year.

Dr. O. W. WIGHT, of Michigan. — Mr. President, this is a very simple matter, it strikes me. The American Public Health Association, I take it, is designed to be composed of gentlemen who are familiar with sanitary science, and with the practice of sanitation. It must maintain its character as such. That it has, or ought to have, a scientific and practical representation is not questioned. The question now is simply whether the Executive Committee of this body shall reject applicants, and not allow them in the Association, or in the membership of this Association, in any way whatever; or whether it shall open the door to a partial membership, so that we may take in and associate with certain

gentlemen whom we would not like to have pass upon the sanitary questions that come up before us. The question simply is, whether we will reject altogether those who are not sanitarians, as we should be obliged to do to maintain our character, if this amendment be not adopted; or whether we shall open the door to partial membership, that they may associate with us temporarily in that capacity.

Dr. HEWITT, of Minnesota. — Mr. President, I wish somebody would give us a definition of what they mean by sanitarians. One would suppose that it was something very peculiar; something very difficult; something very remote; something possessed but by few. Now, I have been a worker, a practical worker, in sanitation for over ten years. It has been my duty, as the executive officer of the State Board of Minnesota, to work through several measures, and the most efficient sanitarians — sanitarians whom I am willing to recognize as my peers — in my State to-day are women and men who never have had any special connection with medicine or sanitation, in the technical sense. My idea of this organization when I went into it was this, and when I was written to about it, and asked to put my name down for membership, it was distinctly stated to me that it was for the purpose of educating the American people up to sanitary work, or the necessity of sanitary work, rather; and it was so specified in the constitution, and is specified in the constitution to-day: —

> The objects of this Association shall be the advancement of sanitary science, and the promotion of organizations and measures for the practical application of public hygiene.
>
> The members shall be selected with special reference to their acknowledged interest in, or devotion to, sanitary studies and allied sciences, and to the practical applications of the same.

It will be seen that members are to be selected with reference to two things: first, with reference to their knowledge as experts in sanitary science, and as to their interest in, *or* their devotion to, it, — making the distinction that the first people we want to get in are those interested in and engaged in this work; then we who are engaged in this work should inoculate the others with our science. It was for the purpose of securing a popular interest in the matter that this Association was organized. That is specifically stated in the constitution. Now it is time that somebody defined what is meant by sanitarian. I hear it constantly thrown up to us here. Now, is not sanitarian a relative term? He need not be a sanitary expert. Nor is the object of this Association merely to affect legislation, — though that seems to be the theory of a good many men, that all that can be done by sanitarians is to procure the passage of laws and the distribution of funds. Now, the greatest sanitary work in the country to-day is being done by women and men outside of sanitary work, in the ordinary sense. It is the education of our people up to the knowledge and necessity of what constitutes sanitation. Mr. President, what is the unit of sanitation? It is the

family. The unit of public sanitation to-day is the family, as the unit of the family is the individual. It is the families of this country that this Association is intended to reach, — not the legislatures, specifically. My interest — and I know the interest of a large number of others, who devote their time, and means, and brains, to this work, — is based upon the belief that such was to be the result. If it is a mere technical association of sanitarians, in the special sense, my interest is greatly lost; because it is a failure in that direction, and has been from the beginning. The object was, specifically, that we could, by means of it, create a popular opinion that would bring sanitation, not merely into the legislatures of States, but into the homes of the people. Now, to go a little further, do you want to know the unit of health in a community or organization? It is the family physician, not the health officer of the community, at all. What we want, in the professional way, is to get every person in this country, of whatever school, or whatever practice, to come into this Association, and become inoculated with the principles which guide us here, that he may take them home, to the profit, I hope, of the families in the community where he lives. Any local health officer, any State officer, who has had to deal with —

The PRESIDENT. — I am obliged to remind the gentleman from Minnesota that he is wandering from the question before the Association.

Dr. HEWITT. — Mr. President, I am getting at the point. I did not intend to speak at all, and I will not say another word unless I am desired to. I speak with feeling, because I take a deep interest in this matter, and I have the right to speak. I ask that this Association hesitate before it makes any such classification of its membership as is proposed in this amendment. Whenever a man or woman desires to be a permanent member of this Association the only qualification that should be required of him or her is the primary qualification of professed and acknowledged interest in sanitary work. Beyond that we can grade as we please; but open wide the door, and let any one that wants to be a permanent member come in and sit here. If they are not interested they will not stay long, and if they are interested they will come again and again. Now, I am not afraid of submitting great sanitary questions to the people of this country. I do not think it is necessary to circumscribe those who are to sit here and express the opinion of this Association. The people of this country are a great ways ahead of a great many organizations similar to this; and this Association is intended as much for their mouth-piece as for the mouth-piece of those who make sanitation a part of their life-work.

Dr. HENRY B. BAKER, of Michigan. — Mr. President, I only wish to say a word or two. I hope the proposed amendment will pass, because I think, on the whole, it is important. If it does not, however, I hope the Association and the Executive Committee will be a little closer, from this time on, than they have been heretofore in admitting members. My own theory is that, perhaps, on the whole, we had better keep these men, that we propose to take in, out entirely, as Dr. Gihon and Dr. Wight

have suggested that as the other alternative. I rather think that they ought to be kept out entirely; but this proposition certainly ought to have approval unless we are to keep them out entirely, and I hope, on the whole, that this amendment will be adopted.. If not, I hope the Executive Committee will do a little better than they have been doing in the past. In fact I have felt a little bit like criticising them; because I acted on that committee at one time, and know how applications for membership have been acted upon. I hope, Mr. President, the amendment will be adopted.

Dr. J. E. Reeves, of West Virginia. — Mr. President, as one of the oldest members of this Association I feel that the Association will, at least, do me the honor to listen to me a moment, and, as a member of the Executive Committee, I beg to be heard. Now, gentlemen, what are the facts? Simply these. When this Association was formed some of the wisest sanitarians in this country spent their time and their money in visiting New York, Long Branch, Philadelphia, and elsewhere, for the purpose of perfecting an organization which we have here to-day, and in its constitution we have the clause concerning membership. What has been the result of the labors of this Association? The officers will tell you that our volumes are valued not only at home, but abroad. They are a credit to any country, and for one reason solely. Simply because the Executive Committee have earnestly and energetically discharged their duty in saving from that volume anything which would do it discredit. Now, the Executive Committee have had to perform some very unwelcome duty, some very unpleasant services to the Association. You would be surprised at the character of some of the papers which have been presented to the Association, and which, had they gone into our printed volume, would have damned the Association in the eyes of all sensible men forever. You need just such machinery as you have got to pretect your honor and your dignity. I submit, gentlemen, that the men who have quit their homes, and given their time, and spent their money, for no other purpose than to protect the honor and dignity of this Association, should be heard in matters of this kind. This proposition to change the constitution, or this amendment to the constitution, has been very carefully studied and criticised by your Executive Committee. They have turned it over from year to year, and it has at last been determined that it ought to pass. And there are many reasons why it should pass, — reasons that cannot be given on this floor to-day, because there is not time, — but I declare to you that I am perfectly honest and sincere in saying, as an old member of this Association, and as a member of the Executive Committee, that I believe the very life of this Association depends upon the passage of this amendment. If you do not pass it, then, when the times comes that you see the bitter and adverse fruits of your action to-day, blame yourselves, and not the Executive Committee, who have recommended its passage.

The Secretary (Dr. Ames, of Massachusetts). — Mr. President, it seems to me that my friend from Minnesota (Dr. Hewitt) has made the

very best argument in favor of the proposed amendment that can be made, although, from his point of view, he would give it another character and another name. It seems to me that he is right: that what we do want is the entire public to be interested in sanitary science, — man, woman, and child, — and that we want them in this Association; but we do not want them in the management of it. As Henry Ward Beecher says, "If he don't care anything about a thing he lets his wife and children rule him; if he does care anything about it, he don't." Now, just so in the matters we care about. In a matter that we care about we believe in having men trained for it, accustomed to it, who have studied it and worked at it practically to regulate it; so that we may give to the country, to ourselves, and all who are interested in it, the benefit thereof. You would not put every man on board a ship at the helm. It would be dangerous to do so in a rough sea; and I believe we get into rough seas sometimes, when but for the wisdom, care, and far-seeing judgment of our leaders, as we have had them in the past, we should have been shipwrecked, beyond doubt. I agree with my friend from Minnesota (Dr. Hewitt), we want all the people in the country interested in this question; but not as permanent members of this Association; not to help keep the ship trimmed; not to take an active part in moulding the work that goes out all over the land, and all over the sea, and, as has been said by one member, has already brought back from beyond the sea the highest encomiums. I get everywhere expressions of the highest appreciation of the volumes of our Transactions. Those volumes were not made up by accident. They were not made up by a heterogeneous throwing together of the opinions of Tom, Dick, and Harry, who might meet here. They contained well-thought-out ideas, and we know how they came there; and if they are to continue there it must be through the same process. I believe we want all the people. We want the majority of them as associate members. We want those who are specially skilled, like Dr. Hewitt and his associates, in State Board of Health work, and those whose special position in life makes them practically acquainted with sanitary science, to manage this matter, and sail the ship. They are of the sort of men to be the working members, to keep the ship's head to the wind; and it is the others who furnish the strong, helpful backing, while in their appropriate lot and place; and I believe nine-tenths of them would say, yes, it is as associate members that we should stand.

Dr. Bell, of New York. — Mr. President, may I be excused for saying a few words more? One of my associates on this floor has expressed some fear that without this amendment the public might come in here and overrule sanitary science. Mr. President, I am not afraid of that. I believe sanitary science is strong enough in this Association, and out of it, to rule it. I believe that it has been ruled by the strength of the Executive Committee hitherto appointed by this Association. I have been honored with membership on that committee, and among those who have been abused in the public prints because certain persons

were not made members of this Association, when there were several reasons for not electing them. I have refused to give the reasons, as the committee now has the right to do. If any one comes before the Executive Committee as an applicant for membership, and the committee thinks it knows a sufficient reason why he should not become a member, let him not be made a member, no matter what school he comes from. I understand that this Association is in favor of no sectarianism. As a private individual, and as a member of this society, I am ready to welcome every sanitarian, whether he comes here as a plumber, an architect, or "*pathy*" of any kind, if only he is a good worker; but if the Executive Committee, for what they consider sufficient reason, think in any particular case the applicant should not be admitted, they are not called upon to say why. I think every member of the Association would be loyal to the committee, and would say, we will not call on you for reasons. But I think all those who are willing to come in here and give their strength and their time and their money to testify their interest in sanitary science, although they may not be able to write a scholarly paper fit to go into the Transactions, or any paper at all, should be welcomed. I do not think we ought to reject those men. Now, I regret exceedingly to find myself in antagonism with many gentlemen here whom I have known so long, and whose opinion I respect so highly; but my conviction makes me feel and speak strongly, though I know that those who differ with me feel in their hearts that they are equally right.

Dr. Wilson, of Michigan. — Mr. President, I hope it will not be thought that I desire to cut short debate, or prevent any one's speaking; but it strikes me the question has been sufficiently discussed, and, in order to bring it to a vote, — for, if this amendment is to pass, it must certainly be changed; I do not believe it can be passed at all, and that is the question I wish to test, — I now renew my motion that action on the proposed amendment be indefinitely postponed.

The motion was seconded, and the question being put, the Secretary reported: yeas, twenty; nays, twenty-two.

The President. — The motion is lost.

Dr. Wilson, of Michigan. — Mr. President, I call for a standing vote.

The President. — The decision of the Chair has already been announced, and it is now too late to call for a standing vote. The question is now upon the adoption of the amendment.

Dr. Wilson, of Michigan. — Mr. President, I call attention to the fact that the proposed amendment puts arbitrary power in the hands of the Executive Committee, and I wish to offer an amendment.

Dr. Reeves, of West Virginia. — Mr. President, I rise to a question of order. An amendment cannot be offered after the question is submitted.

The President. — The only time for amending an amendment to the constitution is before the question is submitted.

Dr. WILSON, of Michigan. — Does the Chair rule against my right to offer an amendment?

The PRESIDENT. — My ruling was that the amendment was not in order. The amendment to the constitution, which has already lain over a year, cannot be amended now.

Dr. WILSON, of Michigan. — Mr. President, I am not proposing an amendment to the constitution, but I am proposing an amendment to the amendment that is proposed to be made to the constitution.

Dr. REEVES, of West Virginia. — Mr. President, I withdraw the point of order.

The PRESIDENT. — The point of order is withdrawn. The gentleman from Michigan may proceed.

Dr. WILSON, of Michigan. — I call attention again, Mr. President, to the fact that this proposed amendment puts arbitary power into the hands of the Executive Committee. They are to decide by their own sweet will who are to be members.

Dr. HUNT, of New Jersey. — Mr. President, if the gentleman will permit me, they decide that now.

Dr. WILSON, of Michigan. — But, Mr. President, they have not the right to decide whether they shall be associate or active members, because we have no associate members. That committee is to decide now whether the proposed membership shall be active or associate. The constitution, as it shall stand when this amendment is adopted, still lets it remain that active members "shall be selected with special reference to their acknowledged interest in, or devotion to, sanitary studies and allied sciences, and to the practical applications of the same." The Executive Committee never could have got over that in the world; but they can get over this amendment, for there are no qualifications specified. It is not stated what associate members shall be. The Executive Committee alone say who shall be associate members, and who shall be active members. Now, I propose an amendment, as follows: —

In Article III. of the constitution, in the third line, after the words "applications of the same," to insert "and associate members shall be selected with special reference to their general interest only in sanitary science."

Now, I ask for the adoption of that amendment to the amendment.

Dr. BILLINGS, U.S.A. — Mr. President, the amendment proposed by the gentleman seems to be perfectly in order. It is not any substitution of a totally different thing, for the amendment which has laid over one year. The parliamentary rule on such matters is simply whether the amendment to the amendment proposed to the constitution is germane or not. Certainly it seems to me that this amendment is germane, and it does not strike me that there is the slightest objection to it. I would, if the mover of the amendment, accept it without hesitation, if it was in my power.

Dr. GIHON, U.S.N. — Mr. President, the impression has been given

that the Executive Committee is arrogating some, or has given to it, some unusual power. Now, permit me to say, that every scientific association in this country has an Executive Committee, which has precisely the same power which this committee is entrusted with; and it has been found, by long experience, that it is absolutely necessary to entrust the Executive Committee with just that discriminating power. It is no unusual thing.

The PRESIDENT. — I will submit it to the Association whether it is in the power of the mover of an amendment to accept an amendment proposed to his amendment, or whether it must be adopted by the Association.

SEVERAL MEMBERS. — Let the amendment to the amendment be read.

Dr. WILSON, of Michigan. — Mr. President, the amendment is simply this: the constitution at present reads, "The members shall be selected with special reference to their acknowledged interest in, or devotion to, sanitary studies and allied sciences, and to the practical applications of the same." The motion to amend is simply to insert at this point the words, "and associate members shall be selected with reference to their general interest only in sanitary science." Then follows whatever may follow of Dr. Ames' amendment.

The Chair put the question on the adoption of the amendment to the amendment, and the Secretary reported: yeas, fifty-one; nays, none.

So the amendment to the amendment was adopted.

Dr. WILSON, of Michigan. — Now, Mr. President, I have another amendment, which is to strike out the following words in the third line, "shall be elected only for the year for which they are proposed," and also the words, "They may be reëlected"; so that the amendment as amended will read: —

In Art. III., at the beginning, introduce the words, "The members of this Association shall be known as active and associate. The Executive Committee shall determine for which class a candidate shall be proposed. The active members shall constitute the permanent body of the Association, subject to the provisions of the constitution as to continuance in membership. The associate members shall have all the privileges and publications of the Association, but shall not be entitled to vote."

The amendment to the amendment was seconded, and was unanimously agreed to.

Dr. WILSON, of Michigan. — Mr. President, now, as there is probability that another pending amendment will be passed, which will make the clause incongruous as it stands at present, I move, after the words "Executive Committee," in the first line, to insert the words, "or Council," because the Executive Committee will really be put out of the way, and the Advisory Council will take its place, as I understand it. I want to insert the words "or Council" after the word "Committee," in the first line, or else we will have to go back and amend this next year.

Dr. BILLINGS, U.S.A. — Mr. President, I expect it will be time

enough to make that amendment when we come to deal with the other amendment giving to the Council the powers of the Executive Committee.

Dr. WILSON, of Michigan. — Mr. President, I will accept the suggestion of my friend, Dr. Billings. I have one more proposition to make in connection with the proposed amendment. I move to amend the amendment by striking out in line four the words, "but shall not be permitted to vote." I say you cannot get members to come in here and pay their money and do their part, if they have no voice or vote in the proceedings of the Association.

The amendment was seconded.

Dr. REEVES, of West Virginia. — Mr. President, I want to say that I think that would be to place this Association in a most extraordinary position. It would subject us to the ridicule of all scientific associations in this land. What would the American Medical Association say to such a proposition? It is the custom at our annual meetings to invite the public; but it is well known that even in the American Medical Association permanent members cannot vote. It is a representative body. And yet it is proposed, by this amendment of the gentleman (Dr. Wilson), to do this very thing which it has been the object of all who have had the interest of the Association at heart to avoid. I hope it will be the pleasure of the Association to vote this amendment down very promptly.

The SECRETARY (Dr. Ames of Massachusetts). — Mr. President, it strikes me as at least a breach of good faith in the gentleman (Dr. Wilson) to propose this amendment. The society has shown a disposition to accept all of his propositions that had merit, and a willingness to amend the amendment in every possible shape, so as to properly enlarge the capacity of the Association for receiving the people. Now his next move is to entirely blot out all the difference that could possibly exist between associate and permanent members, destroying the spirit of the original amendment entirely. It does not seem to me to be exactly the way that I should do.

The Chair put the question on the adoption of the amendment to the amendment, and the Secretary reported: yeas, five; nays not counted.

The PRESIDENT. — The amendment to the amendment is manifestly not agreed to. The question recurs on the adoption of the amendment to the constitution as previously amended. The Secretary will report the amendment as amended.

The SECRETARY. — The amendment, as amended, is as follows: —

In Art. III., at the beginning, introduce the words, "The members of this Association shall be known as active and associate. The Executive Committee shall determine for which class a candidate shall be proposed. The active members shall constitute the permanent body of the Association, subject to the provisions of the constitution as to continuance in membership. The associate members shall be elected with special reference to their general interest only in sanitary science, and shall have all the privileges and publications of the Association, but shall not be entitled to vote."

The Chair put the question on the adoption of the amendment as read, and the Secretary reported: yeas, thirty-nine; nays, five.

The PRESIDENT. — The amendment is adopted by more than two-thirds majority. We will now take up the next amendment.

The SECRETARY. — The next amendment is as follows: —

In Art. III., in the first line, after the word "the" and before the word "members," insert the word "active," so that the line shall read "the active members shall be selected with reference," etc.

The chair put the question on the adoption of this amendment, and the Secretary reported: yeas, thirty-five; nays, none.

The PRESIDENT. — The amendment is unanimously adopted. The next amendment is now in order.

The SECRETARY. — The next amendment is as follows: —

In Art. III., last line, insert the words "in either class," after the word "membership," so that the sentence shall read "The annual fee of membership in either class shall be five dollars."

Dr. WILSON, of Michigan. — Mr. President, I move an amendment in the first line to strike out all after the word "membership," and insert "for active members shall be five dollars, and for associate members, three dollars."

The amendment to the amendment was seconded.

The Chair put the question on the adoption of the amendment to the amendment, and the Secretary reported: yeas, three; nays, thirty-eight.

The PRESIDENT. — The amendment to the amendment is lost. The question recurs upon the amendment, as read by the Secretary.

The question being put the Secretary reported: yeas, thirty; nays, none.

The PRESIDENT. — The amendment is unanimously adopted. The Secretary will read the next amendment to the constitution.

The SECRETARY. — The next amendment is as follows: —

In Art. VIII., in the last line but one, strike out the words "six weeks" and insert the words "one week," so as to read, "at least one week preceding the date of such meeting."

The Chair put the question on the adoption of the amendment, and the Secretary reported: yeas, thirty; nays, none.

The PRESIDENT. — The amendment is adopted. That closes the amendments which have been taken from the table.

The SECRETARY. — Mr. President, The second proposed amendment was offered by Dr. Jerome Cochrane, of Alabama, and having laid over one year is now in order for action, and is as follows: —

That Section VIII. of the constitution shall be so amended as to read as follows: —

VIII. There shall be a standing committee, to be known as the Executive Council, which shall consist of twenty-one members, of whom no two shall be from the same State. The members of the Executive Council shall be elected for three years, except that at the first election after the adoption of this amendment they shall be divided into three classes, of seven members each, one class to serve for one year, one for two years, and one for three years. They shall be nominated in the same way as other officers of the Association. A majority of the whole number of the Council shall constitute a quorum; and whenever it occurs that a quorum is not present at any session of the Association, the president shall appoint a number of temporary members to make up a quorum, said temporary members to serve only for that session. . . . "All committees," etc., to the end of the section, as at present.

That in Section IX., the third clause, which is in these words: "To consider all applications for membership, and, at the regular meetings, report the names of such candidates as the majority shall approve," shall be amended by adding the following words: "And when any application for membership comes before the Executive Committee, from which they may deem it advisable to withhold their approval, or which may seem to require investigation, they shall notify the member endorsing the application of the grounds of objection, so that the applicant may have an opportunity to appear before the Council, in person or by his friend, to vindicate himself; and any such applicant who is dissatisfied with the final action of the Council shall have the right to appeal to the Association."

Dr. HUNT, of New Jersey. — Mr. President, I move the indefinite postponement of this amendment to the constitution.

The motion was seconded, and the Chair put the question. The Secretary reported: yeas, thirty-three; nays, seven.

The PRESIDENT. — The consideration of the proposed amendment is indefinitely postponed.

Dr. JOSEPH M. TONER, Washington, D.C. — Mr. President, I now move the reconsideration of the vote just taken, and move to lay the motion to reconsider on the table.

The Chair put the question, and the Secretary reported: yeas, twenty-five; nays, seven.

So the motion was agreed to.

The SECRETARY. — Mr. President, the next business before the Association is the resolution proposed by Dr. Plunket, of Tennessee, which was, on motion of Dr. Gihon, of the Navy, made a proposed amendment to the constitution. Having laid over for one year, it now comes up for action, and is as follows: —

Resolved, That, for the future, the Advisory (and Nominating) Committee of this Association be constituted as follows: The delegates present at this meeting from each State shall select one of their number, who collectively shall constitute the Advisory and Nominating Committee.

Dr. GIHON, U.S.N. — Mr. President, I move that the consideration of this amendment be indefinitely postponed.

The motion was agreed to.

Dr. GIHON, U.S.N. — Mr. President, I now move to reconsider the vote

by which action on this amendment has been indefinitely postponed, and move to lay the motion to reconsider on the table.

The motion was agreed to.

The PRESIDENT. — The next business before the Association, according to the programme for this morning, is the paper of Dr. Horatio R. Storer, of Newport, R.I. In Dr. Storer's absence the paper will be read by Dr. Gihon.

Dr. Gihon, U.S.N., read Dr. Storer's paper, entitled "The Newport (Edinburgh) System of Sanitary Protection." (See page 42.)

The PRESIDENT. — Gentlemen, the paper is before you for discussion. Has any one any remarks to offer upon this paper by Dr. Storer?

DISCUSSION.

Dr. HUNT, of New Jersey. — Mr. President, I only rise because I think there are many points in the paper that are valuable; and there are one or two points which I especially desire to emphasize. I think this whole experience of Newport is very valuable, so far as voluntary associations are concerned, because it is not ephemeral in its character, but extended over a long time, and has exerted a very large influence; and, therefore, it is worthy of study as a model upon which these local village health committees are to be formed. In order to stir up the people of a community to find the authority, and to exercise power, their value in this respect, I think, should be carefully studied by sanitarians. And there is another point, — in regard to house-to-house inspection. We very often hear it remarked that the house is the sanitary unit, and it has occurred to me whether there is not a great opportunity for local Boards of Health to extend their power and influence, and at the same time extend the education of the people, by having a sort of paid system by which they shall conduct sanitary inspection, instead of taking the Edinburgh method, which is entirely voluntary in its character. In the Newport system they have constituted Boards of Health in towns which are specially authorized to inspect, under a distinct paid system, so arranged that it is not excessive, which secures an order of ability technically proper and correct. If we could only extend our system of sanitary inspection to the households of a whole city in such a way a great deal of good would be accomplished. I only throw out these suggestions, because it seems to me they should be used in the interest of health wherever it may be practical, instead of trusting to voluntary associations, which are naturally without power; or, at least, that kind of power which is necessary, and which is not given to boards somewhat ephemeral in their character. If we can combine the authority of the municipal powers with the power which is freely given by those who want their houses properly inspected, we shall be able to keep our towns in a much better sanitary condition. The whole paper, while somewhat diffuse, certainly has in it much merit, and especially in the two regards which I have taken occasion to bring to your notice.

Dr. JAS. F. HIBBERD, of Indiana. — Mr. President, there is another

point of great popular importance, which I would like to see emphasized, and that is the fact — long prominent, perhaps, before scientific men, but overlooked almost entirely by the populace — of the danger of contaminated ice. I suppose it is true that the people of the towns and cities and villages in this country take their ice without question; and if they were presented with a cup of water to drink from the ponds where this ice is formed, they would spurn it with disgust. And yet they take the ice, put it in their refrigerators, and put it in everything that they use, without a word or question in regard to its sanitary condition, or its value or fitness as a drinking material. Now, if this point can be made prominent, persons who use ice will be as exacting of their ice merchants in regard to the sources of their supply as they are in the matter of water for drinking purposes, and they ought to be. It would seem, from the statement made in the paper, that not only is the ice bad, but, in a great many instances, it is a great deal worse than the water itself.

Dr. DEVRON, of Louisiana. — Mr. President, the doctor spoke of the importance of house-to-house inspection. Its importance has long been felt in New Orleans, and has long been carried out, and is being yearly improved upon. The working of our system is so perfect that to-day the city of New Orleans — the combined Board of Health and the Sanitary Association of New Orleans — can furnish to any person desiring it a record showing the sanitary condition of each house in the city. We can to-day, in ten minutes' time, furnish a statement of the conditions prevailing in every house in New Orleans, so perfect have we made that system. It originated with our late President, Dr. White. The work is there done by the joint efforts of the Board of Health of the State of Louisiana and of the Sanitary Association of New Orleans. The State Board is the legal board of New Orleans, and has the authority to enforce these house-to-house inspections, attended by officers furnished yearly by the Sanitary Association, which officers receive commissions from the Board of Health, making them virtually city and State officers also. By these means we have the right of entering into every domicile, and by that joint power, coming from both the legal and volunteer sanitary organizations, the officers engaged in this work are received with much greater cordiality than is to be supposed would greet them otherwise. Visits are made daily, no more being exacted of any one officer than he can do thoroughly; and duplicate copies of all reports are kept, one by the Board of Health, and one by the Sanitary and Health Association. By this method to-day the Sanitary Association of New Orleans can be consulted by any one wishing to purchase a house; and as much stress is given to its sanitary conditions and the probabilities of health for its inmates as is given to the question of a man's capacity to pay his debts by a mercantile agency.

Dr. RYAN, of Texas. — Mr. President, there was one matter I noticed in the paper in regard to ice; that is, as to its impurities. This is a very important matter, especially in Texas, where we use so much ice. Until the last few years the ice that we use in Texas was

brought from the North; and perhaps as to the most of it we could not inquire into its character. There are two large ice factories there now, and I suppose the artificial ice is most used. But I cannot think the water used by those factories is good. One uses water from the Colorado river, filtered to get most of the impurities out, and the other uses water from very shallow wells, — wells in the city, and these shallow. Now, those wells must necessarily become contaminated in a city. That ice has been used so short a time that it has not yet produced any bad effect that I know of; but I think it would be right and proper for the matter to be investigated, to see whether the ice will be as deleterious as the water would be. It is pretended, and I know it is the doctrine of those persons who make ice, that the process of freezing clarifies the water, that it kills the germs that would be deleterious; but I also understand that that is not the fact. To our people who live in a warm climate, and use a great deal of ice, this is a very important question. It is very important to us that the ice we use be pure.

The PRESIDENT. — If there is no further discussion on Dr. Storer's paper, the next business on the programme is in order: A paper by Dr. Thad. M. Stevens, of Indianapolis, Ind., entitled "The History of Health Work in Indiana."

Dr. Stevens, of Indiana, read his paper. (See page 63.)

The PRESIDENT. — The resolutions offered in this paper will, according to our standing rule, be referred to the Executive Committee without debate. With this exception, the paper is before the Association for discussion.

DISCUSSION.

Dr. HENRY B. BAKER, of Michigan. — Mr. President, I think there is a question as to whether people can be forced in this matter. I understand Dr. Stevens proposes to have a law that shall enforce compulsory vaccination, for one thing.

The PRESIDENT. — That matter is in the resolutions, and they are not before the house.

Dr. BAKER, of Michigan. — How is it about compelling people to derive their water supply from the lower strata, or hard-pan? I will take that for an illustration, then, Mr. President. It seems to me there is a better way. It seems to me that if the State Board of Health can place before the people the danger there is in the use of water obtained from certain sources, they will accomplish more than in any other way. In our State that is the rule, and we seem to get on very well. I question whether the proposition to have a law compelling the abandonment of such wells as are spoken of in the paper as dangerous would not cause an antagonism immediately among the people; and cause such an antagonism that they would be unwilling to listen to evidence at all, and the result would be to retard the very movement which it is sought to promote, to start and keep going. It seems to me that the better way is to place the facts before the people. State them strongly. Then let

them be a law unto themselves, or make their own laws. That strikes me as the better plan to adopt, and let it run through the whole system of sanitary work. I started on another point; but if that is not debatable this serves the purpose of illustration just as well. I think the plan of having the State Boards of Health work up a law compelling the people to do so and so, and nothing else, will be a failure every time. That is the way it looks to me.

Dr. DEVRON, of Louisiana. — Mr. President, I do not agree with the gentleman. A Board of Health, without power to enforce its rules, or what it thinks to be correct, is possessed of little or no power. The power of persuasion, if it exists, implies already the power of action; for in no State can a Board of Health exist, and do any good, until the people are prepared and want to have one. A voluntary association, or anything of that kind, may suggest to the people what would be proper, and what would be improper; but a Board of Health, be it local, or be it State, must have authority to compel, and the people must be ready to obey. If the people are not ready to obey, through their representatives, they will repeal the law; they will dissolve it; but a Board of Health without power is an ornamental Board, and nothing more.

Dr. BAKER, of Michigan. — Mr. President, I would like to ask the gentleman which he considers to have the most real power with the people of New Orleans, whether it is the Sanitary Association there, or the Board of Health they have there? One does its work by persuasion, and the other tries to do it by force. I would like to know which one does the best work.

Dr. DEVRON, of Louisiana. — Mr. President, they both do their share. The Sanitary Board and the Sanitary Organization suggest to the people what should be done, and they obey; but if the people will not obey, or cannot pay for the work to be done, the Board of Health uses its legal authority to enforce the dictates or the demands of the Sanitary Auxiliary Association. Alone they would both be powerless. The Board of Health itself would be unable, in many cases, to carry out the work, I admit, but for the joint aid and influence of the Sanitary Auxiliary Association. It requires the assistance of the intelligent people, and then it succeeds. But I do not change my position, that the Board of Health must have the people prepared for it, and must have some authority. Whenever you want to enforce sanitary measures you must have the people understand that it is for their welfare; and, until they are prepared for it, there is nothing more tyrannical than sanitary laws.

The PRESIDENT. — The hour for adjournment has arrived, and our forenoon's exercises will now close. The Association stands adjourned until half-past seven o'clock this evening.

EVENING SESSION. — 7.30 O'CLOCK P.M.

The Association was called to order by Governor Albert G. Porter, who assumed the chair.

The PRESIDING OFFICER (Gov. Porter). — The exercises of the

evening will begin with an address of welcome by Mayor Grubbs, of this city.

Mayor Grubbs then addressed the Association. (See Addresses of Welcome, page 15.)

Governor Porter then addressed the Association. (See Addresses of Welcome, page 14.)

The PRESIDING OFFICER (Governor Porter). — Next in order on the programme is the address of Professor Kedzie, President of the Association.

The President, Professor R. C. Kedzie, read his address. (See page 1.)

Dr. SPEED, of Kentucky. — Mr. President, I believe there is a rule of this Association, which provides that all papers read before the Association become its property; but heretofore they have not been published for nearly or quite a year after the time of their reading. I move now that the rule be so far departed from this evening as to ask for Dr. Kedzie's manuscript, in order that it may be presented at once to the public through the daily press, so that every man, woman, and child in America may read it.

Dr. HUNT, of New Jersey. — Mr. President, I am requested to say the morning papers are represented here, and there will, no doubt, be a full report of this address contained in them. We certainly shall see to it that this and other important and excellent papers are published before a year's time, in the regular form.

Dr. SPEED, of Kentucky. — Mr. President, that meeting the requirement, as I thought, of the occasion, I, of course, withdraw my motion. My only object was to insure the immediate publication of Dr. Kedzie's paper.

The PRESIDING OFFICER (Mayor Grubbs in the chair, Mr. Porter having retired). — The exercises for the evening are now closed. The sessions of this Association will be held in this building to-morrow and the day after. The discussions will be of great interest, and I trust our citizens will attend these meetings in large numbers. The meeting now stands adjourned until to-morrow morning at 10 o'clock.

The SECRETARY. — Will the Association remain a few minutes for the transaction of business after the general audience retires?

The PRESIDENT. — There is a large amount of work to come before the Advisory Council, and I wish to convene the Council at once. Will the Secretary call the roll of the Advisory Council?

(The Secretary called the roll.)

The PRESIDENT. — I nominate, in accordance with the instructions of the Association, to temporarily fill the vacancies of the several States whose members are absent, the following gentlemen: —

Dr. CANTWELL, of Alabama.
Dr. HATCH, of California.
Dr. CRAIG, of Illinois.
Dr. MORRIS, of Maryland.

Dr. MEAD, of Mississippi.
Dr. CONERY, of Missouri.
Dr. CONN, of New Hampshire.
Col. HADDIN, of Tennessee.
Dr. RYAN, of Texas.
Dr. CABELL, of Virginia.
Dr. MOFFETT, of West Virginia.
Dr. GRIFFIN, of Wisconsin.
Dr. BULLOCK, of Florida.
Dr. GARNETT, of District of Columbia.
Dr. BILLINGS, U.S. Army.
Dr. TURNER, U.S. Navy.
Dr. BAILHACHE, U.S. M. H. Service.

The PRESIDENT. — The Council is desired to meet upon the stage immediately upon adjournment. The Association stands adjourned to meet at 10 o'clock to-morrow morning.

SECOND DAY.

WEDNESDAY, October 18, 1882.

MORNING SESSION. — 10 *O'CLOCK A.M.*

The PRESIDENT. — The Association will come to order. Prayer will be offered by Rev. O. C. McCulloch, D.D., of Indianapolis.

The PRESIDENT. — The first business in order is the announcements of the Local Committee.

The SECRETARY. — Mr. President, I am desired by the Local Committee to transmit to the Association the following invitation: —

INDIANA INSTITUTION FOR THE EDUCATION OF THE DEAF AND DUMB,
INDIANAPOLIS, IND., Oct. 17, 1882.

TO THE AMERICAN PUBLIC HEALTH ASSOCIATION: —

Gentlemen, — You are hereby invited to visit the Indiana Institution for the Education of the Deaf and Dumb, at any time during your stay in the city.

Very respectfully,

WILLIAM GLENN, *Superintendent*.

The PRESIDENT. — What is the pleasure of the Association with reference to this invitation?

The SECRETARY. — Mr. President, I move it be individually accepted, as the members find opportunity to do so, and that the invitation receive place in the regular vote of thanks of the Association for courtesies rendered.

The motion was agreed to.

The SECRETARY. — Mr. President, I have also the following, from the Local Committee: —

The Board of State-House Commissioners respectfully invite the American Public Health Association to visit the new State-House building, now in process of erection, at any time suitable to their convenience during their stay in this city.

By order of the Board,

JOHN GODOWN, *Secretary.*

INDIANAPOLIS, Oct. 17, 1882.

Dr. HUNT, of New Jersey. — Mr. President, I make the same motion with regard to this invitation that was made with regard to the invitation from the Superintendent of the Deaf and Dumb Asylum.

The motion was agreed to.

The PRESIDENT. — If there are no further announcements from the Local Committee, announcements from the Executive Committee are next in order.

The SECRETARY. — Mr. President, I am directed by the Executive Committee to announce as recommended for permanent and associate membership, respectively, the following-named gentlemen: —

(See list of names of those elected on last pages of volume.)

The PRESIDENT. — What is the pleasure of the Association in regard to these candidates?

Dr. BILLINGS, U.S.A. — Mr. President, I move that the names of the gentlemen thus read off by the Secretary, as recommended respectively for active and associate members by the Executive Committee, be declared duly elected as active and associate members, according to the list.

The PRESIDENT. — Do you mean that the Secretary be instructed to so cast the ballot of the Association?

Dr. BILLINGS, U.S.A. — Yes, sir; I will make the motion in that form.

Dr. HUNT, of New Jersey. — Mr. President, I would say a word by way of explanation. Most of the applications that have come before the committee have been signed only by one person, and where the committee knew the candidate they have added their own signature, — that is, that of some member of the committee. It is very desirable that such necessity should be avoided. As it is, our signatures are repeated a great many times, because the applications came to us with only one signature, and we found it necessary to add some one.

Dr. WILSON, of Michigan. — Mr. President, I desire to ask of the Executive Committee if Dr. Beebe and Dr. Williams, whose names have been reported here as recommended for associate members, did not petition, and were not recommended, for active membership of this Association.

The SECRETARY. — My impression, Mr. President, is that they both were recommended for active membership; but the committee, acting under the powers given it by the Association, decided to recommend them as associate members. I am not positive about it, but I think that is the case.

Dr. WILSON. — Mr. President, both of them are active members of the medical profession. Why the line of distinction should be drawn excluding these gentlemen from active membership is beyond my comprehension. I would now move that those gentlemen, being duly recommended, be placed on the list of active members of this Association. Dr. Williams, of Chicago, and Dr. Beebe, of Sidney, Ohio, are both active practitioners of medicine, and there is no reason why they should be discriminated against in this manner.

The PRESIDENT. — Is this motion seconded?

Dr. BILLINGS. — Mr. President, the motion is entirely out of order. It is contrary to the constitution, and the amendment adopted yesterday.

The PRESIDENT. — The amendment adopted yesterday, according to the impression of the Chair, places this matter entirely in the hands of the Executive Committee. The Executive Committee having acted upon it — if the Chair is correct in that impression — the motion of Dr. Wilson is out of order.

Dr. WILSON, of Michigan. — Mr. President, I would dislike very much to appeal to the house. It seems to me that the report of this Executive Committee stands exactly in the same relation to the Association as the report of any other committee.

The PRESIDENT. — Does the gentleman from Michigan appeal from the decision of the Chair?

Dr. WILSON, of Michigan. — Mr. President, I do not like to do that, unless necessity compels me to do so. But I call the attention of the Chair simply to this question: That a committee making a report throws its report upon the Association, as committees in any other deliberative body do, and the Association certainly is not compelled to swallow it whole. It is subject to subsidiary motions, and it does not have to be endorsed as an entirety.

The PRESIDENT. — The principle announced by the Chair is that the whole matter of the classification of members has been placed in the hands of the Executive Committee by the amendment to the constitution adopted yesterday. The only question before the Association now is, Will you elect, or will you not elect, the gentlemen who have been recommended here by the committee for these different classes? The opinion of the Chair is that the constitutional provision now places the classification of members entirely within the control of the Executive Committee, and it is not a matter, at present, under the control of the Association, — it having been delegated to the Executive Committee by the action of yesterday. If the decision of the Chair is appealed from, the Chair will put the question on the appeal; otherwise the question is on the motion of Dr. Billings, the Chair deciding Dr. Wilson's motion out of order.

Dr. WILSON, of Michigan. — Suppose, Mr. President, that —

The PRESIDENT. — The gentleman is out of order, unless he takes an appeal to the house.

Dr. WILSON, of Michigan. — Mr. President, I desire simply to protest

against the line of distinction which the Executive Committee have taken upon themselves to draw.

Dr. O. R. EARLY, of Kentucky. — Mr. President, the report of the committee is brought here for the action of this house. If the question it involves is not to be determined by this body, then why put it to the house at all? The point of order raised, upon the gentleman who has just resumed his seat (Dr. Wilson), I think is well taken, for the simple reason, that — if I understand him correctly — he made his suggestion simply to meet a motion which is before the house; and, whenever a motion is before the house, under parliamentary rules, it is subject to debate and amendment.

The PRESIDENT. — The matter involved is the classification of members, which is a matter that is no longer in the possession and control of the Association, it having been delegated yesterday, by the adoption of the constitutional amendment, entirely to the Executive Committee. The only question now before the Association is, Shall we elect, or shall we not elect, these gentlemen, according to the recommendation of the committee?

Dr. EARLY, of Kentucky. — Mr. President, I voted for the adoption of that amendment yesterday. When I did it I believed I did it with my eyes open; but if this question is to be determined by the Executive Committee, or any other committee, why bring it before the house at all?

Dr. WILSON, of Michigan. — Mr. President, I wish to make a motion to lay the report temporarily upon the table. I want to see if justice can be done in this Convention. I ask that the report be not made until we have an opportunity to go to the committee and ask them why these gentlemen have been excluded. I make that motion.

Dr. EARLY, of Kentucky. — Mr. President, I second Dr. Wilson's motion, to lay the report temporarily on the table.

The PRESIDENT. — The motion is not debatable. As many as are in favor of the motion will signify it by saying *Aye;* those opposed, *No.* The noes seem to have it. The noes have it.

So the motion was not agreed to.

The PRESIDENT. — The question now recurs on the motion of Dr. Billings, that the Secretary be instructed to cast the ballot of the Association for the election of the several gentlemen named in the committee's report, as active and associate members, according to the recommendation of the Executive Committee. Those in favor of the motion will signify the same by saying *Aye;* those opposed, *No.* The ayes seem to have it. The ayes have it.

So the motion was agreed to.

The SECRETARY. — Mr. President, I hold in my hand a ballot bearing the names of the several gentlemen named in the report of the Executive Committee, which I cast for their election as active and associate members, according to the recommendation of the committee.

And the gentlemen named were elected.

The SECRETARY. — I am directed by the Executive Committee to report the following resolution to the Association, with the recommendation that it be adopted: —

Resolved, That a Standing Committee of five members, to be entitled "The Committee on National Museum of Hygiene," shall be appointed to represent the interest of the Association, and to be the medium of communication between the Surgeon-General of the Navy and the Officers and Members of the Association, to be especially charged with the dissemination of information respecting the museum, and with the collection and transmission, in the name of the Association, of such contributions as it may desire to have therein deposited.

The PRESIDENT. — What is the pleasure of the Association in regard to the resolution recommended by the Executive Committee?

Dr. HUNT, of New Jersey. — Mr. President, I move the adoption of the resolution.

The motion was agreed to.

The PRESIDENT. — Reports of committees are next in order. Are there any committees prepared to report this morning? The Chairman of the Committee on Vital Statistics (Dr. Harris) is present. Is that committee ready to report?

Dr. ELISHA HARRIS, of New York. — Mr. President, the committee has not yet convened. I only arrived this morning with the report which is to be submitted. I will beg, therefore, that the committee may be excused from making its report until a later hour.

The PRESIDENT. — If there is no objection the Committee on Vital Statistics will be granted further time. The Chair hears none, and it is so ordered. The reading of papers is next on the programme. The Secretary will make the announcement.

The SECRETARY. — The first paper on the programme is entitled "Observations in regard to the Relative Size of the Liver and Spleen, and the Normal Temperature, in Texas Cattle," by Dr. Joseph R. Smith, Surgeon U.S.A., and Medical Director for the Department of Texas. In the absence of the author the paper will be read by Dr. Rauch, of Illinois.

Dr. Rauch read Dr. Smith's paper. (See page 25.)

DISCUSSION.

Mr. D. H. BECKWITH, of Ohio. — Mr. President, the statistics presented in this paper are valuable; but I think Dr. Smith has written in his paper what is wrong in regard to the disease not being contagious on the Western Reserve. We have lost thousands of cattle by Texas cattle being driven along the road where our common cattle have come in contact with them. If Dr. Smith should continue his investigations on this subject, I think it is more important than statistics to know what will prevent the spread of that disease in Northern Ohio, or wherever Texas cattle are shipped. Two years ago hundreds of cattle about Cleveland were destroyed by that disease.

Dr. Ryan, of Texas. — Mr. President, there are certain portions of the country into which if Texas cattle were driven they will take this disease. There is no doubt of that. I know a gentleman who believes that the cattle will not take the disease in his portion of the country; but if they are driven up into Illinois and Missouri, there they will take the Texas fever. If they are driven into Wyoming or Colorado territories they don't seem to take the fever. Why that is I do not know. I suppose it is well known by every physician that if you remove a patient from what is commonly termed a miasmatic or malarial district he is likely then to get intermittent fever, even in a healthy place. Now what is the reason? I do not know. I know friends who are in the habit of driving thousands of cattle through Wyoming Territory, and not one of them gets sick after they get there. There will a few die on the way of what they call *Black-leg*. They are generally heifer-yearlings, or two-year-olds. But in Texas they don't have it. I do believe that if driven to Illinois, or Missouri, they will take it; but thousands are driven to Wyoming Territory, and they don't take the disease. I have a particular friend who has driven thousands there this year, and not one of them look sick along the Red river. I think some of the heifer-yearlings, or the two-year-olds, are apt to die of what is called *Black-leg*. Now in regard to importing fine stock there. They have always died of Texas fever. It is with the greatest difficulty we can introduce it. If you bring your fine stock from Mississippi, or Louisana, or Alabama, they are not so apt to die; but I have a friend who took a drove of fine stock down a few years ago from Illinois. He stopped and left them awhile at Dennison, in order to acclimate them, and nearly every one died when he took them to Burleson county. Invariably a large number die. We do better to bring in calves, or young stock.

Dr. Beckwith. — Mr. President, if the gentleman will allow me, I would like to ask of what disease they died?

Dr. Ryan. — Mr. President, they die with this same disease, or typhoid fever. If you drive them to Wyoming they don't take the fever; and they are now shipped in great numbers to St. Louis, and there is no trouble. But that the fever does not prevail in Texas, among our Texas cattle, I suppose it is tolerably certain. We used to have a disease in Mississippi, but not in Texas, to some small extent, which we called murrain. It was evidently a typhoid or zymotic fever.

Dr. Hunt, of New Jersey. — Mr. President, I wish especially to call attention to the importance of this paper, and the continuance of this investigation, because of the very important bearing of this whole disease upon certain questions etiologically, which it is exceedingly proper such associations as this should examine. We have not yet decided the exact relations that exist between Texas cattle-fever and euthrax, and it is exceedingly important that we determine upon some classification of the Texas cattle-fever, — where it belongs, and what is its real etiology, and also what is the proper classification of it in relation to euthrax. I had opportunity and occasion this year to witness, in the

shambles at Liverpool, an examination to determine that very matter, and there were found signs of splenic fever, ulceration, etc.; and the case came up afterwards in the courts. It is very important that we examine into this matter, because, while the meat of the pleura-pneumonia is allowed to be sold in market, it is declared that the meat from cattle suffering from Texas cattle-fever, or euthrax, shall not be allowed to be sold. Then it gives us a very fine opportunity of investigating this disease in its analogies and relations. You will notice that the whole question of the influence of acclimatization comes up in reference to this fever, and its relations to all the diseases which are concerned in this question of acclimatization. It seems to have a law of its own, just as yellow fever has, and that it does not attack the native as it does the visitor. We need very thoroughly to investigate these facts and conditions. It is asserted, for instance, that the Texas cattle naturally have larger spleens, and somewhat larger livers, than other cattle, and it is the belief of some that this is owing to the general malarious influences which surround them all through their life; that they become accustomed to it, and for that reason do not suffer as other cattle. Therefore I regard the study of this disease in its analogy to all sorts of fevers that are local in their character as exceedingly important. I know of no line or direction in which study and investigation just now are so valuable, in a comparative way, in this country, as on just this very subject. I have had occasion — it has been the duty of our Board for the last two or three years to look after these matters, and I have had occasion to be present at, and to assist in, *post-mortem* examinations of cattle dying of this disease. The Texas fever is at this very time in my own State, and I cannot express my own benefit from, or my own interest in, the examinations made by Dr. Harris and others, in 1868; and I would call the attention of the Association to that series of investigations made at Communipaw, in my own State, by Dr. Harris and others, in 1868. I recognized the first case that came into my country from the reading of the report of those investigations. From the picture of the disease that is presented in that book, as I looked over the first case I had ever seen, I would have known it was the very disease. It seemed as though they had photographed it. When we came to examine the different organs, and saw the intense congestion of the spleen and the congestion all through the body, I could not help but regard the study of the comparative relations of this disease and miasmatic fevers as one of the greatest importance. Our best authorities, you will remember, when asked what the relationship is between Texas fever and euthrax, said they were disposed to regard Texas fever as a form of euthrax. When asked what that was, they tell you that it is a disease occurring in low places, in miasmatic districts; but I have seen on a farm in my own State, within three months, three or four cases of pure euthrax, and we could not trace the disease to any contact with Texas cattle. And there have been other cases. Five cattle died at one place. Three horses died. Six sheep died. Two hogs, that got well, were examined, and twelve hours after the examination both died. The

man who made the examination received, in some manner, a slight abrasion of the skin, and suffered from a swollen arm. He did not die, but had to go under treatment. Then we studied very closely to make the connection between this disease and the Texas cattle-fever, and could not. Within three months afterwards, in the next county, we had the veritable Texas cattle-fever. This is a matter that may well draw the close attention of this Association; and not only do I hope that Dr. Smith will continue these investigations, but I hope all those lines of study touching splenic fever and euthrax, and the various contagious diseases that affect animals, and the subject of their relations to the diseases of men, will receive the very careful attention of the members of this Association.

Dr. HARRIS, of New York. — Mr. President, I think we have scarcely begun, as this Association will before long admit, our duty in public hygiene. What we want just now is for Dr. Smith to pursue his admirable inquiry, and for him and his associates in the army of future advancement to go further in their researches. We want also a Robert Koch. We want a Pasteur. We have a disease to deal with that is something more than a disease of acclimatization. In 1868 the Metropolitan Board of Health of New York, and its organized friends, endeavored to show that it was being transported from the West and South into our States; and their report upon the investigations concerning the Texas cattle disease are of very exceptional interest, and will be found in the Third Annual Report of the Metropolitan Board of Health, and also in the Agricultural Report of New York State for the same year, 1868. The fact is this: we made no great progress, although there was a good microscopist at work, and other gentlemen of distinguished ability were engaged in it. But it was before Koch commenced his work in a like field, and accomplished definite results. Now, I think, if it is possible, for this Association to-day, — and I think it should urge in its resolutions on this subject, — that adequate etiological researches, including microscopic investigation, shall be pursued in this study. We will recommend that, as your committee, if you please. I propose to offer such a second resolution, which is not included in the first. There is no doubt that the disease we have to deal with at the North kills cattle so rapidly that, as Dr. Rauch says, over two million have perished in Illinois, and a very large number perished in this State, and a very great number have perished *en route* of transportation eastward. So great was that number that the Messrs. Alexander, of Champagne County, gave me written permission to take any of their cattle from the cars, on the New Jersey side, in the interest of science. They did this in the hope that something might be discovered to stay the ravages of this disease. They gave their cattle, native stock, — for the Texas cattle never die of the disease, although something like a hundred of them that I have examined presented pathological signs of some malady which had left great scars that seemed to be worthy of study, — and careful *post-mortem* examinations were made, and everything that science could suggest was done. These cattle perished in large numbers in Indiana in 1868, and have per-

ished at different places since that time as far west as South-western Missouri, and in various parts of our country. And this year in at least seven places in the State of New York the disease has appeared in herds pastured on ground where three weeks before, more or less, Texas herds, while being moved from one point to another for market, had remained for a certain brief period; sometimes only over night. Now, all this is just such a study as Robert Koch has prosecuted in determining the great question of the sources of charbon diseases, or splenic fever, in Germany, and fixing certain pathological facts and etiological demonstrations beyond all question. Dr. Rauch recollects how carefully he began such inquiry. Now, unless Dr. Smith, and the committee that may serve this Association in this matter, will couple with their inquiries such especial laboratory work, and such especial scientific means, I apprehend we will make no worthy progress; for it is doubtless true that in the North, all the way from South-western Missouri, quite up to Michigan and down to Rhode Island, we have seen this disease forming a very distinct malady of cattle, following the mere herding of a Texas herd that bore no mark of any disease upon them. I heartily commend the admirable conclusions so far given in the three reports of Dr. Smith; but they fail to bring us to that point where science stands ready to offer some of its grandest and most useful revelations.

Dr. RAUCH, of Illinois. — Mr. President, I would suggest that the Association request Dr. Smith to continue his observations and report the results to the Association, as he has been doing. I make that motion.

The motion was agreed to.

Dr. HARRIS, of New York. — Mr. President, I now beg leave to offer as a second resolution the following: —

Resolved, That the American Public Health Association deems it desirable that a committee on the pathology and etiology of Texas cattle-disease be formed, to study in the interests of the Association the etiological questions connected with this disease in the Northern and Middle States.

Dr. RYAN, of Texas. — Mr. President, I second the resolve.

The SECRETARY (Dr. Ames, of Massachusetts). — Mr. President, every member present is in full accord with the wish and purpose of Dr. Harris's motion. I have had no opportunity to suggest to him what I know would have governed his motion somewhat, and that is the fact that we have a large Standing Committee on Cattle-Disease. Probably, if this had occurred to the doctor, he would have made his motion one of instruction to them, rather than to multiply committees.

Dr. HARRIS. — Mr. President, I candidly accept the suggestion of the Secretary, and modify my resolution, simply making it a motion of instruction to that committee to continue such pathological and etiological investigations as to the presence and etiology of Texas cattle-disease, as they are able to make.

Dr. RYAN, of Texas. — Mr. President, I seconded the former resolution, and will accept the modification.

The motion, as modified, was agreed to.

The SECRETARY. — Mr. President, I now move that Dr. J. R. Smith and Dr. Elisha Harris be added to the Committee on Cattle-Disease.

The motion was agreed to, and the names of the gentlemen mentioned added to that committee.

The SECRETARY. — Mr. President, the next paper in order is that of Dr. E. E. Holman, of Illinois, on "Stock Transportation."

Dr. Holman read his paper. (See page 137.)

The PRESIDENT. — The paper is now open for discussion and remark.

DISCUSSION.

Dr. T. S. VERDI, of Washington, D.C. — Mr. President, I have heard the paper. It is true; every word the writer has said is true, and a great deal more could be said touching this matter of the transportation of live-stock, and particularly the manner of killing animals, and the manner in which they are cared for at the shambles. Some way of preventing these abuses must be devised; and then, with the advance of sanitary science and the education that we give to the people, they will have the proper legislation. One of the greatest difficulties to deal with is the transportation of cattle from State to State. One State enacts certain laws regarding the transportation of cattle, while other States are probably indifferent, or more reckless, and have not legislation sufficient to protect animals. This will come in the future, as our people become better educated; but one very important thing, Mr. President, is when the animal gets home; when it gets near your home; when it comes to be slaughtered, and when the animal is offered for sale. In my travels in Europe, as Sanitary Inspector for the District of Columbia, I made a special point of examining the manner of the disposal of the animals in market; and, as things are feasible and practical there, so they are feasible and practical here. It only wants the men to carry them out. What is wanted is the abattoir properly conducted. In order to make it plain, I will relate the details of what I found at Turin, in Italy, — it is a place that every tourist visits as a place of interest, — I found there what is called the stock-market, where stock is sold for farming-purposes; side by side is the abattoir, which is a very large yard surrounded by walls, and this is the way the thing is worked: the animal that is sold for slaughter is brought to the gate, and there he meets the veterinary surgeon, that makes the first examination. When that animal is admitted into the yard he is not allowed to be killed for twenty-four hours, but is put in a stable, and is properly fed. At the end of the twenty-four hours the veterinary surgeon makes another visit, examines the animal, and determines whether or not it is to be killed. If it is found in good condition, the verdict is given to slaughter; if not, the animal is ordered to the hospital, — they have a hospital on the ground, just as good a hospital as you will find anywhere, — and there the animal is treated by the veterinary surgeons, and when in proper condition it is returned to the butcher, and killed. But that is not enough. As soon as the animal is killed, the butcher is for-

bidden to touch it. The veterinary surgeon goes there and examines the entrails, and the liver, and the organs, — examines the animal after death; and then, if found sound, the impress is put upon the quarters of the animal as prime first-class meat, second-class meat, or third-class meat. These classifications are simple, and prevent the butchers from deceiving the purchasers, by selling, for instance, third-class meat for prime meat. That is a question that is not sanitary; but it is very important in a poor country, where poor men are willing to eat second-class meat, provided it costs less money. The animals that die in the hospital are buried right there, and never touched by anybody else; they never go outside of the premises. That is the way you can protect the people against unsound meat; and it is the only way that you can do it. After the animal gets into the hands of the veterinary surgeon it cannot be sold unless it is declared sound by the officers. When we reach that point in this country then we will be safe in buying the meats that we find in our markets, and not before.

Dr. R. D. Murray, U.S.M.H.S., of Florida. — Mr. President, I have listened to the remarks of the gentlemen in regard to the transportation of cattle with pleasure. To refer to Texas fever for a moment: in Florida, as in Texas we transport a great many cattle, and, as far as I know, our Florida cattle are very healthy. Now, the gentleman from Texas said that a great many of his cattle are transported without manifesting any sign of disease. Now, why is it? Without knowing anything of the pathology of the Texas fever, I venture to express an opinion that it is the transportation which is the cause of the fever. As we all know, the livers and spleens, not only of human beings, but of cattle, in warm climates, are more active than those of the residents of cold climates. A slight change may disorganize these livers and cause congestion, or even an inflammation of them. Now in the transportation of these cattle, as the gentleman has told us, they are all jammed up together in a car; not only the cows, but the hogs and sheep, are put in the same car. I observed the other day a car filled with cattle, and at every lurch of the car I found that the jar was communicated to them, sufficient, as I suppose, to have a bad effect upon the animals. Now, would it not be pleasant for a lot of human beings to be packed that way in a car? I should think that the jamming together of thousands of pounds upon one individual would be enough to cause some disease of the liver; and this is the way it is with the cattle. You put a lot of them in a car, and each jar of the car brings them together, and probably bruises their internal parts, and in that way brings on inflammation of the organs, resulting, probably, not only in pneumonia, but in other diseases. I think it is very likely that the Texas fever is due, not to any disease originating in Texas, or in Florida, but simply due to the manner of transportation; that it brings on this fever.

Dr. Ryan, of Texas. — Mr. President, this fever comes on before the animals are transported in the cars. We sent some cattle down in Illinois the other day to see whether the Texas cattle did take the fever there.

Not one was taken in the cars; they were driven on foot, and carefully driven on foot; and all arrived in Illinois in as good condition as they left Texas, and yet they communicated the fever in Illinois.

The PRESIDENT. — If there are no other remarks upon this paper the Association will now hear the paper entitled "Life on Wheels," by Dr. T. P. Wilson, of Ann Arbor, Mich.

Dr. Wilson read his paper. (See page 142.)

DISCUSSION.

Dr. A. N. BELL, of New York. — Mr. President, I made observations some ten years ago of a scene in a sleeping-car, in the morning, when the passengers were seeking water to wash. The tanks were empty; the train was a little late. After about an hour they reached a place where they filled the water-tanks. On looking out of the window I saw they were filling up with water from a noisy road-side stream. Three children I noticed at the same time were with their drinking-cups drinking from that tank. Examining the premises, I counted within sight three ordinary privies; the nearest one being, I suppose, about fifty yards up the stream from the cars, and two a little below, on the bank of this little stream. The sable porter, who was filling the tank, passed by me, and I said, "My friend, do you know the condition of the water you are putting in that tank?" He says: "Humph! anybody can see that is nice water; see how clear it is!" He filled the tanks with that water, and of that the passengers drank and washed. I have noticed conditions more or less approaching that a good many times since. I go through the country everywhere, and watch, and when I get off into the more thinly populated places, where the cars stop for water, these conditions are frequently observable. Now, going back a little in the paper to this subject of the ventilation of cars, I felt like taking exception to the writer's position in regard to upper and lower berths. As a matter of convenience, simply, I am in the habit of taking a lower berth; one convenience is, I can separate the curtains a little bit better than the man above. I know, however, that it is frequently the case that persons who occupy the upper berth are very particular to have any openings that there may be closed; that being the case, with the ordinary motion of an impure atmosphere, I am rather inclined to think the man in the upper berth gets the worst of it. They certainly do if they feel any inconvenience in getting up. The great important thing needed in cars is the abolishment of this upholstered furniture in the southern portion of the country. That is something we should, if possible, set our faces and our influence against. The ordinary clothing — the costly and thick blankets that the bunks are supplied with — is not washable. These are slept on by somebody every night, and shut up with the mattress during the day. We are told — and I believe truly — that they are taken out, and beaten and cleaned; they take all the care they can of this kind of material. They beat out this bedding; but do they beat out its dangerous condition? Take the costly cushions, made up of the very best material,

because poor material will not stand the usage received in these cars; it is na elegant silken plush, but it will hold more dust than any material that I know of, more of anything else that is in the air, more disease germs, or anything else. They may clean all they can, but a portion of it always remains in the car nothwithstanding. We might go still further, and demand that the heavy curtains be taken away. I never ride on those cars that it does not occur to me that some movement should be inaugurated to substitute for these deep heavy woollen bolsters, and these other things, something quite as ornamental that the travelling public would be glad to accept, that would be portable, and easily ventilated and cleaned. There are beds and cots that fold up, that could easily be made suitable; and a canvas mattress on springs would make a nicer, softer bed than any they have now in the cars. There are so many of these suggestions crowding in upon me that I will not enumerate all of them; but I am satisfied that there is a call for a change. They should all go, — the carpets, and cushions, and everything of the kind; and when that is done the facility of getting air by the constant opening of the door would be tenfold what it now is; but the first thing is the necessity of care in the water supply.

Dr. O. R. Early, of Kentucky. — Mr. President, I think I am about as well prepared to appreciate the paper just read as any member of this Association. Up to a given time there was no one whose breathing apparatus was any more perfectly healthy and freer from obstruction than my own. I had occasion to make a visit on business that involved about two days' and one night's travelling. When I entered the car I found it crowded. The weather was cold. After being there an hour and a half or two hours there came up an odor that was exceedingly offensive to the passengers, and we began to examine as to the cause of it. Upon examination we found two or three passengers with large ulcers upon their persons, going in search of health to the health resorts. The temperature was low, but we had to resort to the raising of the windows for ventilation. The window was raised by my own seat, for my own comfort and my own safety. In about a half hour I was attacked with a case of acute catarrh. I heard no coughing in the coach at the time I went into it; but in three hours' time at least three-fourths of the occupants of that car were coughing violently. To what was it attributable? To the rapid change of the temperature in the car, and for want of proper ventilation. I, to relieve myself, sought the sleeping-car. It is a well-known fact to chemists that rank vegetation exhales during the night carbonic-acid gas, and during the day inhales oxygen. It is equally well known to pathologists that we inhale oxygen and exhale carbonic-acid gas. In the sleeping-car, which was crowded, I sought sleep. Night came on and we retired. Between eleven and twelve o'clock we were aroused by a noise in one of the berths in the sleeper, — an upper berth. Upon approaching we found a man, a hale, hearty gentleman, in a perfect syncope. Some gentleman present called attention to the fact that the atmosphere was excessively close, and the odor not very pleasant. Upon opening the door to the

outside air came an illustration of the fact the doctor has alluded to. The position of the upper berth is worse, because you there get all the lighter gases.

Dr. O. S. RUNNELS, of Indianapolis. — Mr. President, I wish to call attention to a single point in regard to sleeping-car travel. I think all practitioners of medicine have found their patients are prone to take cold on sleeping-cars; and it has been a question with me for some time how it comes about. Of course it is partly due to impure air and bad ventilation, etc.; but I have thought a good deal of it is due to the position the person takes in the car when sleeping. The usual way is to go into the berth with the feet towards the head of the train. Now, there is a very strong draft through every car, owing to the motion of the train; it is cut off from the end of the berth towards the front of the train, and I have noticed particularly, myself, that those persons who sleep with their head towards the front of the train are not so prone to take cold. Since following this plan myself I have had no difficulty, and before I always did have. I think that is the point.

Dr. H. R. MILLS, of Michigan. — Mr. President, during the last month my occupation has called me a great deal on the cars, and there is one thing that has not been mentioned that has attracted my attention; and that is that oftentimes the water supply, the water-tank, is enclosed inside of the water-closet, and conducted out by a pipe through a partition; or conducted out in some such way that the water-closet and the water-supply are intimately connected; it is almost universally the case now. And another thing that has attracted my attention, as I presume it has attracted the attention of everybody else who is much upon the cars, is this, the condition of that accommodation called the water-closet, — the corner room. It is such, as seems to me, to demand the universal protest of all sanitarians, and all bodies that have any interest whatever in the management of railroad cars.

Dr. E. E. HOLMAN, of Illinois. — Mr. President, Dr. Wilson, in his paper, called attention to the fact that travellers on the cars are prone to become constipated. Dr. Mills has called attention to the condition of the water-closet; and I merely wish to say that if, with the mercury in the thermometer at between twenty and thirty degrees, and such a stream of cold air running up one's spine, that will not cause constipation, I would like to know what will.

The PRESIDENT. — If there are no further remarks upon this paper, the next paper in order, entitled "The Work of the State Board of Health of New York," by Hon. Erastus Brooks, of New York, will be read by Dr. Harris.

Dr. HARRIS, of New York. — Mr. President, as the writer of the paper I hold in my hand is not here to read his communication, a brief epitome of the history of the Board's work will, perhaps, be most acceptable; and I will venture here to trespass, and epitomize the whole thing in a few words. The State Board of Health of New York, if it attracts unusual attention in any manner, does it in, perhaps, this respect, — that

its powers are very limited, while its duties have been very extensive and obligatory, as regards the Board itself, — a certain respect that must be paid the Board. Being the twenty-fourth of the series of State Boards, the first, as you recollect, being that of Massachusetts, organized in August, 1869; that in New York was organized on the last day of May, 1880, — the twenty-fourth in the series of State Boards of Health, or States that created a certain State function for a department. Of course Texas and Arkansas would be included in the twenty-three preceding New York. The law for the State of New York provided that the Board should be so made up as to represent fairly the existing sanitary services performed in the larger cities. The three cities of New York, Rochester, and Utica, came to be represented by the selection by the Governor, without hesitation or obstruction in any manner, of three active commissioners; and the three that were selected had to be confirmed by the Senate, and are known as Commissioners of Health. The said Commissioners of Health were selected without conference with the existing political elements in the State. It had to be done hastily, as the Legislature was just going home. The Legislature had been some ten years in preparation, and at last enacted the law, giving a State Board a much more limited power than some of the newer States gave to their State Boards of Health. As, for example, Illinois gave a much larger power and wider field of operation that should affect public health, because it would affect the local profession. In New York great effort was made for two years to secure something like that which entered into the organic law of Illinois; but that failed. We now have a State Board endowed with these functions: first, to secure the organization of the local Boards of Health, power even to issue the order, which is in the form of a notification, without needless expression of authority, although the authority exists, to compel such organization in every township in the State. The same marked provision of the law for the organization of these local Boards of Health extends to the villages, without the power of the State Board to order a village to organize. Every city must organize its Board of Health. We have nine hundred and twenty-seven committees, three hundred and twenty-six incorporated villages, and twenty-four incorporated cities. The townships have complied with the order to organize, given to each separately. The villages are not all organized, nor perhaps will they be where they are small, as they may be mere hamlets. The cities all now have Boards of Health organized under what is termed the new statute concerning the personnel of the Boards of Health. The next duty that is mentioned as conferred upon the Board relates to the registration of vital statistics, and the general supervision of that branch of sanitary work. Each local Board of Health finally, after various amendments of the law during the last two years, is required to have the supervision of the registration of births, deaths, marriages, and the record of diseases, if it is within the limits of its jurisdiction. This is one of the advantages which the State Board of Health of New York finds to be very desirable if it could be extended to all the city Boards; it

is a burden inasmuch as all the forms, and especially the advice and information upon which the work proceeds, must be given by the State Board. The cities have their own separate registering officers provided under their special charters or statutes; so that we have chiefly concerned ourselves with the records for towns and villages. Our cities are now organizing their registration service under the general statute which defines the powers of the State Boards of Health. In securing this advantage we have already secured this result to the Board: that in the registry of deaths and cause of death, and the study of diseases, the local Boards of Health find there a real inspiration to the careful study of the preventable causes of disease. The State continues to throw upon the State Board of Health certain duties that are essentially hygienic, such as (first after the Board was in operation) the examination of food and drugs to prevent adulteration. That has now become a special service, — experimental, if you please, — and upon that the Board has employed a staff of officers specially adapted to the work, distributed throughout the State, and connected with the different colleges. There were eight in the first year; now there are four, and the service has laid the foundation for a publication that will now be published from time to time. About two hundred and eighty pages are in print now, showing, as the question is put, "Are our foods pure or adulterated; are our medicines and drugs, as sold, adulterated or not?" These publications are not yet announced, but they will doubtless be one of the chief methods of administering the execution of the law; although a prosecuting attorney, under the advice of the State Board, or by advice of the local Board, or local authority, may proceed and prosecute offences against that law for the prevention of the adulteration of foods and medicines. The last law that has been added to the service of the Board relates to the testing of illuminating oils; and that is found to be a somewhat difficult, and not altogether pleasant, part of the service. It has been assigned to an especial body of chemists, already employed, and is under the general supervision of one of the committees of the Board; so that that work is being begun. The result of the effort thus far has satisfied the State Board that it may be undesirable to have all the authority, and all the law that might be asked for, for the theoretical perfection of a service. This far we can report: that the committees of the State are willing to organize upon a higher and better basis for their local sanitary service than we could have perhaps predicted, with only one exception. Each town Board elects one citizen, who shall especially be selected their helper, and this Board is an annual Board, — the town and village Boards are made up annually, — and these town Boards are working better than we would have predicted from anything we had seen in the United States. It is comparatively easy for it to execute its own laws, and this is the secret, perhaps, of its power. The town and village Boards of Health in the State of New York — not the city Boards unless they are organized under the new statute, which a very few have done — may determine what is a nuisance, and determine and declare its existence, and may thereupon make the necessary order

for its abatement, prevention, or amelioration; and the failure to comply with the order, or the disregard of the order in any manner, may be followed, or shall be followed if the Board is faithful, immediately with a fine; the fine being fixed by the Board itself without going into court, but that fine may not exceed one hundred dollars. Therein lies a power which thus far has been advantageously used; we will report further upon this point hereafter. The collection of the fine must be settled by process, and that may bring the case or bring the debt into court, and therein lies further experience. While this is in progress, however, actions in court may immediately ensue upon the ordinary process of indictment for misdemeanor, any violation of the regulations of the Board, when once published, being punishable as a misdemeanor. Thus far we report progress, and Mr. Brooks has given in detail some statistical evidence. The State Board reports its progress, and I submit the statistical statement made by Mr. Brooks, which is in the possession of the chairman.

The PRESIDENT. — If there is no further discussion we will take up the next paper, which is a "Statement of Sanitary Progress in West Virginia," by Dr. James E. Reeves, Secretary of the Virginia State Board of Health.

Dr. REEVES, of West Virginia. — Mr. President and gentlemen of the Association, I am admonished by the lateness of the hour that I must be very brief in my remarks, and I will therefore endeavor to give you a very rapid survey of our progress in sanitary work in West Virginia. Fifteen years ago, Mr. President, strange to tell, there was no such thing known in West Virginia as a well-organized health department in any part of the State, and notwithstanding our chief cities then numbered a population of twenty-two thousand. As I say, no such thing as a permanent health department was a part of its government. Witnessing the situation, a physician of the city busied himself about the matter and prepared an ordinance, and exerted his influence to have that ordinance passed by the Council, establishing a permanent health office, with a salary of $800 a year for the health officer. With very much opposition the ordinance was passed, and from that little leaven the whole State has been involved; and to-day we have in West Virginia, we think, as perfect a health organization as is to be found anywhere in these United States; and it is a Board of no doubtful character or position. We have eight members of the State Board of Health. They are appointed by the governor; their qualifications are that they shall have been engaged in reputable practice for not less than twelve years, and are graduates of a reputable medical college. Two of them are appointed for two years, two for four years, two for six years, and two for eight years; so you see that it is impossible with any gubernatorial change for the complexion of the Board to be disturbed. The law gives us the widest range. Indeed, our powers comprehend every question connected with sanitary science; and we are given the strong arm of the law, and it is made the duty of every justice of the peace, and every prosecuting attorney in the State, to enforce the law as it has been written by the Legislature. Now, how

was this accomplished? And you will pardon me, for I desire that you shall know the facts, in order that you may do likewise. It is an old saying that is so often heard, "What is everybody's business is nobody's business." Our State society had resolved year after year that there should be a health organization; but medical men could not agree among themselves as to a formula of the law we should have. The time came when one or two men concluded to take the matter in hand, and the law was prepared without any consultation with the profession generally; but they took for their models the best laws of the other States, and from them made as perfect a law as possible and presented it to the Legislature, and said, "This is absolutely necessary; the advance of the times requires that you shall pass this law, and in the name of the medical profession of the State of West Virginia we demand that it shall be passed"; and, gentlemen, that law was passed in West Virginia, after six weeks' canvassing, with only six negatives on the final vote. But our law is unique in some respects. We are not only confined to sanitary work, but we control the practice of medicine in West Virginia, and we are doing it effectually. It is a manifest contradiction to say that the strong arm of the State shall be invoked to protect the people from the invasion of disease, from foul odors and contagions, etc., etc., and then say that any man who calls himself a doctor may stalk through a State and carry death and destruction in his pocket, to deal it out without restraint, and nobody may say him nay. It is a contradiction I say. We in West Virginia have three classes of physicians: first, those who are graduates of reputable medical colleges; and it is left with the Board to determine what medical colleges are reputable, — we exercise that power. The next class is those that have been engaged in the practice of medicine continuously for ten years — mark you, the word *continuously* — prior to the act of March 8, 1881. These are entitled to registration on the presentment of the sworn testimony of the applicant. The third class are those who have neither a reputable diploma, nor have been engaged in the practice of medicine for ten years. They are required to come before the Board for examination. We have had, I think, one hundred and sixty of that class; some of them having been engaged in practice for seven, eight, or nine years, and several of them were thrown overboard because they were not qualified. And another feature of our law is that we have a special provision against itineracy. Now, mark you this, that every man who assumes the practice of medicine in the State of West Virginia must be possessed of one or the other of these three qualifications. After receiving his certificate, if he then engage in itinerating, he has got to pay fifty dollars a month special license for every month, or fraction of a month, he shall so practise in West Virginia; and it is the duty of the sheriff to collect this fund, and they are doing it all over the State — but I am a little too fast. The system was to be self-sustaining; the fees for the examination of applicants, which is ten dollars in each case, were to constitute a fund for the support of the Board; and let me say right here, and it is to the credit of the medical profession of the State of West Vir-

ginia, that without distinction of so-called school in medicine, the Regulars, the Eclectics, the Homœopaths, etc., all voluntarily contributed a dollar for their certificates, in order to help the Board to carry on its work; and in that way we were able to tide over our difficulties until the second Legislature convened, last winter, when not only was the law reëstablished, but it was made permanent and put into the code; and it is now a fixture in the State government, with a salary of $1,500 per annum for the support of the Board, without any reference whatever to the fees arising from examinations. Now, the most important machinery for sanitary work is the arrangement for the local Boards of Health throughout the State. Every county is possessed of a local Board, constituted by three persons, who must be reputable in character, and one of which, at least, must be a physician qualified to practise medicine in West Virginia. It is their duty to look after the sanitation of the counties, and it is their duty to see that physicians report promptly all contagious or infectious diseases occurring in their practice. And how are they appointed? The county courts nominate to the State Board of Health, and the State Board of Health may reject or confirm as in its judgment it may think best. You see in that particular the State Board has entire control, not only of the general work of the State, but of the work in the counties, too, because we can control the appointment of the local Boards. It is a great stretch of authority, I grant; but it is absolutely necessary for the protection of the work which we have in hand. I am sure, Mr. President, that the same thing can be accomplished anywhere in the United States if there is "a long pull, a strong pull, and a pull altogether" upon the part of the medical profession. If we fail in getting what we desire to carry on this great work of sanitation in America it is not because the American people are to blame. It is not the laymen, but the medical profession, whose duty it is to deal with the sick, and it is to the medical profession the people must look for their welfare; hence it is so important that the medical profession shall become a unit, and, whenever they agree among themselves what shall be done, politicians will come to the front in support of the measure, and the thing will be accomplished.

The PRESIDENT. — Discussion upon the remarks of the Secretary of the State Board of Virginia, Dr. Reeves, is now in order.

DISCUSSION.

Dr. HARRIS, of New York. — Mr. President, I wish to add that one of the essential features of the law of the New York State Board of Health is that which gives it authority to act upon emergencies, and meet a great public want. The authority rests in the Governor of the State, who may at any time, upon the report of the State Board of Health, either by his order, or without an order having been placed in his hands, act, making a summary order, which, without any indictment or motions in court, shall be put into operation. The Governor has seen fit to act very wisely and successfully in numerous instances, such as in one case ordering an expensive line of drainage, where the State Board of Health

founded extensive works, extending through many towns on the way, as on the line of canals, and reaching certain great nuisances. Those orders are found to be practical, and perhaps an examination of those rendered in New York may be of considerable service in other States; while, on the other hand, quackery itself is so capitalized in the State of New York that it is not necessary for the friends of sanitary work to continue to urge that the control of the medical profession should be given to the State Board of Health. Quackery is so capitalized in the State of New York, that it would be unnecessary to enforce any such regulations as are stated by my friend from West Virginia. But in Illinois and in West Virginia there is a grand field for the suppression of such impostors on the people.

Dr. RAUCH, of Illinois. — Mr. President, I am familiar with the legislation of the entire country, with regard to regulating the practice of medicine, and also with regard to the State Boards of Health; and it affords me great pleasure to state that the legislation that is now enforced in the State of West Virginia is better than that in any other State in this Union, — taking everything into consideration, both from a sanitary stand-point, and with regard to regulating the practice of medicine; and I also take great pleasure in stating that I have carefully watched the work of that Board, and, so far as it has gone, it has been very good indeed, and has met my hearty commendation and approval.

The PRESIDENT. — The next paper in order is one entitled "The Uses and Abuses of Animal Vaccination," by Dr. Samuel W. Abbott, of Wakefield, Massachusetts.

Dr. Abbott read his paper. (See page 114.)

The SECRETARY. — Mr. President, I have to announce that Dr. James F. Hibbard of Indiana, being unavoidably absent from town to-day, has requested the withdrawal of his paper, entitled "Propositions Concerning Vaccination." If he should be able to present it at a later time, and the time of the Association permits, he will do so. I have a communication from the Local Committee, as follows, addressed to Dr. Elder: —

> You will confer a favor on me by extending to the members of the American Public Health Association, now in this city, a cordial invitation to visit and inspect this Institution, the Indiana Hospital for the Insane. They will be welcomed in groups or individually, as they come.
>
> JOSEPH G. ROGERS, M.D., *Sup't.*

Dr. GIHON, U.S.N. — Mr. President, I move that this invitation take the course of the preceding invitations that have been received and acted upon this morning.

The motion was agreed to.

The PRESIDENT. — The paper which has been read upon the subject of vaccination is so important that I certainly do not feel that we ought to dispose of it without some discussion, although it is now about time to adjourn for dinner. The paper is before the Association.

Dr. EUGENE FOSTER, of Georgia. — Mr. President, I move that we postpone the discussion of this paper until a special hour. I have had

some experience with human virus and with the other, and I think it is an important question, and should be discussed, and I wish to hear it fully and freely discussed. If it is in order to make this discussion the special order for this afternoon, or to-night, or to-morrow evening, I would like to see it done, and I ask the President if that can be done.

The PRESIDENT. — It has been suggested that there will be time for the discussion this afternoon. We always dislike to displace papers that are upon the programme; but it is probable that the papers for this afternoon are not long, and there will be a little time, and if the gentleman sees fit to make the motion, that at the end of the regular programme this afternoon this subject be taken up for discussion, it will be in order.

Dr. FOSTER, of Georgia. — Mr. President, I will then make the motion that, if any paper upon the programme this afternoon is not read, this discussion shall take its place; or, if they are all read, this discussion shall follow immediately at the conclusion of the afternoon's programme.

Dr. H. D. BECKWITH, of Ohio. — Mr. President, I second the motion of the gentleman from Georgia. There is no subject more important among sanitarians than vaccination, and I think an hour or two's discussion will establish the fact that bovine virus is not always good.

The PRESIDENT. — If there is no objection, the motion will be taken as agreed to. If the discussion takes place in the time allotted to any paper, of course the length of the discussion will be limited to the time allowed that paper.

Dr. FOSTER, of Georgia. — Mr. President, I move that the matter be referred to the Executive Committee, with the request that they so arrange that we may have two hours for discussion upon this subject, if possible, leaving it to the Executive Committee to determine when that time can be best taken.

The motion was agreed to.

The PRESIDENT. — The Association now stands adjourned until three o'clock this afternoon.

AFTERNOON SESSION. — 3 O'CLOCK.

The PRESIDENT. — The Association will please come to order.

The SECRETARY. — Mr. President, I am directed by the Executive Committee to announce that upon information received since the election of Dr. T. D. Williams, of Chicago, Ill., as an associate member, the committee have transferred him to active membership, in accordance with the provisions of the constitution, he having intimate health administrative relations. There are no announcements of candidates for membership to be made at this time.

The PRESIDENT. — The next business in order, then, is a paper on "Sanitary Inspection," by Dr. A. N. Bell, of Garden City, Long Island.

Dr. Bell read his paper. (See page 34.)

The PRESIDENT. — Before entering upon the discussion of this paper the Secretary has a resolution from the Executive Committee, which they

recommend for adoption by the Association, governing the length of time to be occupied in the discussion of papers.

The SECRETARY. — Mr. President, the Executive Committee direct me to report to the Association the following resolution, with the recommendation that it be adopted: —

Resolved, That no speaker, in discussion, shall be allowed more than ten minutes; and that no speaker shall be allowed to speak more than once, as long as any other gentleman desires to speak.

The PRESIDENT. — I will say to the Association that the committee do not offer this resolution for the purpose of cutting off any discussion, but in order to give every one an opportunity to be heard. What is the pleasure of the Association on this resolution?

Dr. HUNT, of New Jersey. — Mr. President, I move the adoption of the resolution.

The motion was agreed to, and the resolution adopted.

The PRESIDENT. — The discussion on Dr. Bell's paper is now in order. (After a pause.) The Doctor seems to have convinced everybody; so, as there is nothing more to be said on that matter, we will proceed to the reading of the next paper, which is that of Dr. Bela Cogshall, of Flint, Mich., entitled "Is Tubercular Consumption a Contagious and Parasitic Disease?"

Dr. Cogshall read his paper. (See page 164.)

The PRESIDING OFFICER (Dr. Gihon, Vice-President, in the chair). — The discussion of Dr. Cogshall's paper is now in order. If no gentleman desires to speak upon this paper we will pass on to the next, which is entitled "Large Combined Sewers Dangerous to the Public Health," by Dr. J. W. Compton, of Evansville, Ind.

Dr. Compton not being present his paper was read by Dr. E. M. Hunt, of New Jersey. (See page 146.)

The PRESIDING OFFICER (Dr. Gihon). — Discussion is now in order on Dr. Compton's paper.

DISCUSSION.

Dr. HARRIS, of New York. — Mr. President, the subject presented in this paper is one of the chiefest in importance that we can consider. I think, in presenting the title itself, Dr. Compton proves to us that he is not given to the full study of engineering questions. We all recognize the fact that sanitary engineering is now one of the highest branches of sanitary administration, and several sanitary engineers being present in the room, I beg, as a modest man, interested in sanitary work, that the sanitary engineers will especially discuss some of the points of this paper; for combined sewers somehow come to be necessities in some of the older cities, as in Buffalo, where Mr. Warren, the consulting engineer, has concluded that the combined system is the preferred system, and has, during the last fortnight, decided that the combined system shall be carried out. As sanitarians we must adhere to the separate system in

sewers, because, as I understand from the paper, there is a wholesale objection to combined sewers; but we must get the subject before us. I also understand that combined sewers are sometimes a necessity. I beg to hear the sanitary engineers upon a few points that are raised in the paper.

The PRESIDENT. — Will any of the sanitary engineers present address the Association on this subject?

Dr. FOSTER PRATT, of Michigan. — Mr. President, I am not a sanitary engineer, but I happened to be the commissioner in the town where I live, and for the last few years I have been paying very especial attention to the subject of sewerage and the selection of a system of sewerage. We have selected a system of separate sewers, because the grades of our town admit of surface-drainage fully for storm-water. Where the topography of a city or town is such that the storm-water cannot be removed except by under-drainage, it then becomes a very important question to consider whether it can best be removed by the combined system of sewerage or by the separate system of drainage, — a system separate and distinct from the sewers proper. And it is very important that we should consider the peculiarities and necessities of each locality before we undertake to pronounce any positive judgment as to which system is *the* system, and the only system. We find that in the older cities of the Old World some very recent improvements have been made — in London, for example — in the way of intercepting sewers, that have become very important adjuncts to their whole system. The combined system is used in part and the separate system in part; and so circumstances alone will determine in each case what is necessary and what is advisable; but my own judgment, after studying the subject for many years, has brought me to the conclusion that, where the surface of the soil and the grade of the streets will admit of surface-drainage for storm-water, the separate system is the safest, cheapest, and best.

The SECRETARY (Dr. AZEL AMES, of Boston). — Mr. President, I only wish to add simply my word in entire affirmation of what Dr. Pratt has just said. It seems to me that to make a definite and positive assertion that there can be only one plan of sewerage, and that that plan should be universally adopted, is saying altogether too much. One must be governed by circumstances. I am familiar with localities, and have had the adjustment of sewers in localities where it would have been absolutely impossible, or at least impracticable, to adopt any separate system of sewerage; where, owing to the condition of the sewers, and the rapid rise of water, it would have been an utter impossibility to make a distinct and separate system for the removal of the storm-water. It was essential to carry the sewerage out on the combined method. This question must be determined by the circumstances; and while there can be no doubt that certain of the strictures passed by Dr. Compton's paper upon the combined system are unquestionably true, they are not of universal application, and they do not lie with such force as to justify us in making a declaration of condemnation upon the whole combined system.

Mr. James R. Croes, of New York. — Mr. President, if the gentlemen who speak of the combined system of sewerage, so called, refer to that system which carries the storm-water and the sewerage in the same channel, and will confine their condemnation to the improper construction of channels for that purpose, they will be all right. But when they assert that a sewer carrying storm-water is necessarily unhealthy, they assert not only what cannot be proved, but is absolute nonsense. There is nothing at all in that. It is not the size of the sewer that makes it unhealthy; it is the want of capacity for carrying off the foul matter rapidly, and that can certainly be carried off in a large channel as rapidly as in a small one. If the introduction of storm-water into a sewer is unhealthy, how are the storm-waters to be gotten rid of in places where it is not possible, without extreme damage, to carry them off on the surface all the way? For instance, in the city of Indianapolis the ground is so level that in carrying the water off on the surface great damage would be done in heavy storms. The storm-water must be carried off in some way. If you go according to the doctrine that has been propounded in this paper of Dr. Compton's, that the carrying off of storm-water in underground passages is unhealthy, I don't know how the separation of the sewage into one channel and the storm-water into another is going to make that storm-water channel any more healthy. You have got to dispose of the storm-water according to the topography of the country, and you cannot make it unhealthy in one case and healthy in another. As for the assertion that any one single system of sewerage or of water supply is the only one, that is very much as if some doctor would get up here, or some engineer should rise here, and state that Radway's Ready Relief was the only remedy that ought to be applied in any disease whatever. Neither doctors nor engineers can agree when they are told that there is only one method.

Dr. Devron, of Louisiana. — Mr. President, I agree with the last speaker. I certainly must have misunderstood Dr. Compton's paper. He never intended to say that the flow of storm-water into a sewer-pipe made it unhealthy; but that is exactly what occurs. The trouble of the combined pipe lies in the fact that during the absence of storm-water only a portion of the pipe is occupied by liquid, while the greater portion is occupied by gases. But when the storm-water rushes into the sewers, the pipes cannot hold the gases and the water too, and the gases, being the lighter, are driven into the houses that have sewer connection. That is the danger. That this danger can be avoided by traps, etc., is a problem for the engineer. The danger is in the fact that the storm-water occupies in the sewer the place before occupied by noxious gases; and, as the noxious gases are lighter than the water, the water flows on and fills up the pipes, and the gases are forced into the houses.

Dr. William Bailey, of Kentucky. — Mr. President, with all due deference to the sanitary engineers, I well remember the papers read by Col. Waring, an engineer of Newport, R.I., advocating a separate sys-

tem of sewerage; that to me is ideal sewerage. It is a standard of excellence we should attain, if possible; but it may be that circumstances will compel us to take a system that we recognize as not being perfect. It seems to me that one objection to the combined system of sewerage is, that the very season of the year when we are most afflicted with the evils of this system is when we do not have storms. If these combined sewers are kept constantly washed out, and kept clean, then the objection to them would not lie with so much force. But the rule is, in combined sewers, that only the bottom of the sewer is covered, and there is an accumulation of refuse matter which is constantly undergoing decomposition, and the largest portion of the space inside the sewer is occupied by gases. When a storm comes, and the sewer fills up with storm-water, the gases, in defiance of the best sanitary engineers, will enter the habitations of man. This, to my mind, is a very serious objection to the combined system. But there may be other circumstances which control in this matter of sewerage. The city may already have combined sewerage; or the want of money, or the want of a disposition to put in other improvements, may compel that city to continue, or to extend, the combined system. But, to my mind, the separate system is one that is practical, and that should certainly be adopted, where the circumstances will permit, as being less objectionable, for the reason that the noxious gases are less liable to be forced into the houses, etc. Where surface drainage is possible for storm-water it is better; but, even when this cannot be accomplished, storm-water should be carried off, in my opinion, in separate underground sewers, and not in combined sewers.

Dr. FOSTER, of Georgia. — Mr. President, I rise to make an inquiry, and that is, if the Society of American Engineers, and also the Society of English Engineers, are not in favor of the combined system of sewerage? That is my preference, after reading the reports of both these associations. I remember that Mr. Rawlinson, who is the greatest sanitary engineer in England, says that he never did recommend a separate system of sewerage, and he predicts that it will not be efficient. I remember reading that in *The Sanitary Engineer*. Among the objections to the separate system is the want of points of inspection, and many other details. I say all the transactions of the Board of American Engineers, and the English Engineers, are in favor of the combined system, or the majority of them are, as contradistinguished from the separate system.

Dr. E. E. HOLMAN, of Illinois. — Mr. President, we must all recognize the fact that there is no perfect system of sewerage. Perhaps the time will come when some perfect system will be devised whereby we will do away with the danger that arises from sewer-gas coming into habitations and buildings. We know that at present every system is more or less imperfect; and that with the very best calculations, and with the very best work, we are subjected to poisonous sewer-gases, and all the baleful influences that arise therefrom. It seems to me that it would be well for the present to advocate the duplex system, which, I think, will do away

with this evil until we arrive at some system more perfect than anything we have at present.

Mr. CROES, of New York. — Mr. President, in response to the question put by the gentleman on my right (Dr. Foster, of Georgia), I think, as a body, the American Society of Civil Engineers, and the Institution of Civil Engineers of England, have never expressed any opinion with regard to the question; but the main drift of the discussions of those bodies shows that the engineers generally, in England, do not advocate any particular system for every case; that real, true engineering consists in the adaptation of the means to the end in each case. The statement or objection that was made to the combined system, so called, — that is, sewers in which both storm-water and sewage are admitted, — that such sewers contain a small quantity of water at one time, and a large quantity at another time, applies equally well to any sewers of the separate system. There is no sewer-pipe in any separate system, so called, which contains the same amount of liquid flowing through it at all times. They are so proportioned that the maximum flow of sewage will fill the pipe half full, so that there is for the ordinary flow more than half the space in the pipe which is not occupied by liquid; and for the maximum flow there is nearly or quite half of the pipe unoccupied, so that if gases are generated and become unhealthy in a large sewer by there being an empty space above the flow, and because of the sewer containing more water at one time than at another, the same argument applies to the separate system. The only advantage of a complete separation, when both works are equally well constructed, is that the pipes and sewers which are made for the conveyance of sewage alone are smaller, and therefore less expensive, than the sewers which are made for the conveyance of both storm and sewage waters. The admission of gas into houses from the sewage is rendered practically impossible, in any well-regulated system, by the use of soil-pipes, ventilation at the top and bottom, and traps outside the houses, and the ventilation of the sewers into the streets; so that I cannot see wherein the construction of two separate sewers, one which must carry the street washings, and must be absolutely dry during a great portion of the time, and in which there will be a deposit of filth more likely to occur than in a sewer in which house-drainage flows, with its fluctuating quantity, all the time, — I cannot see how such a sewer can be made any more healthy than a sewer in which house-sewage and the storm-water are allowed to flow freely all the time.

Dr. BELL, of New York. — Mr. President, there is one single point in the remarks of the gentleman who has just sat down that I wish to call attention to, and that is the ventilation of sewers into the streets. I do not think that statement should be accepted by this Association without some expression of the danger that arises from the escape of sewer-gas into the streets, if the "germ theory," which this Association has almost accepted, is true. I believe it is very fast becoming the sentiment of most sanitarians that the ventilation of sewers into the streets is a dangerous practice, and the sooner it is discontinued the better. He has cer-

tainly said what in my limited observation meets my most decided concurrence in one thing, and that is as to the danger of using the words "sanitary engineer" to the extent that they used it. If we mean by them, an engineer who makes it his special business to advocate some particular system or plan, and adhere to it through all conditions and under all circumstances, I should certainly object to it. I would a great deal rather hear the term "sanitary engineer" restricted to the operation of such sanitary works as are undertaken in conjunction with sanitarians from another point of view, which might be determined upon as the most suitable for a certain place under given circumstances. I think it is a growing mischief, this adherence to particular plans and the effort to adapt them to all conditions. Another thing upon which nothing has been said, which I think is important, is with reference to the distinction between the separate system in regard to size not only, but as to the material, of the pipes and the increased danger to the larger and double system coming from the material used in their construction. You cannot have the cast-iron pipes, or the terra-cotta pipes, six or seven and some of them twelve feet in diameter. They have to be built of brick, or such cements as are very porous; they very soon become saturated throughout with filth, and they are so all the time, no matter what quantity of storm-water passes through them. Secondly, when they become dry and free from water, the generation of sewer gas goes on from this material in the pipes; and, although I have about as much faith in the efficiency of well-constructed traps about houses as most men, I do not believe there has yet been invented any that with any degree of security will effectually resist the gases under circumstances of pressure, such as those we find will arise in these large sewers when there is a high wind blowing against the opening, and under the pressure of the tide. Under such conditions something has certainly got to give way, and it is usually the weakest point in the system; and to say that a house-trap can effectually resist a strong wind from any direction, or high tide, I think is saying too much. It is a constant fight against our convictions; and I will just say, in conclusion, that if any member here to-day has doubt as to the injurious results arising from the ventilation of sewers into the streets, I would simply challenge him to hold his head for a few seconds over any of the man-holes in the streets. If he ever did it, he knows how he has had to hold his nose; and I don't think he can be very easily satisfied that it does not do harm to let this gas escape in this way.

The PRESIDENT. — If there is no further discussion upon this subject we will now pass to the special order for this afternoon, which is the discussion on the subject of vaccination. Dr. Foster, of Georgia, has the floor.

Dr. EUGENE FOSTER, of Georgia. — Mr. President, I was prompted to ask for this discussion, in order that we might know the experience of men from the different sections of the country in this matter. I was glad to listen to the paper which was read by Dr. Abbott, and I commend it for its manliness and its plain statement of facts. Unfortunately, bovine

virus is the fashion at this time, and most writers upon this subject claim too much for it. I have had considerable experience with both the humanized and the bovine vaccinations, and, at our last State Association, submitted a paper entitled "The Relative Value of Humanized and Bovine Vaccine Virus," detailing my experience as President of the Board of Health in our city and having, under direction the physicians vaccinating the poor, and detailing my own private practice and public work. That paper is a lengthy one, and of course it is impossible for me to discuss anything at length in the short time allotted for discussion here; but, for myself, I am in favor of humanized vaccine virus, and I am now, as I have always been, ready to give my reasons for it. In the first place, it is the oldest in use. In the olden time it was found impracticable to vaccinate a population with bovine vaccine virus. Seeley, of England, who had great experience with bovine vaccine virus, is said to have obtained not more than fifty per cent. of successful vaccination. Dr. Martin, in his early use of bovine vaccine virus, goes on to state his success. I have forgotten what it was, but it was not very great; and he refers to a well-known difficulty in inoculating the human subject with bovine virus. Dr. E. L. Griffin, of Fond-du-Lac, Wisconsin, — I hope he is here, — gives his experience in the *North-Western Medical Journal* for 1872, and he gives his success, which was not very great, certainly not more than seventy-five per cent. I wish to say that I have got bovine vaccine virus from Dr. Griffin, and I have had more successful vaccinations from his vaccine virus than from that of any other propagator that I know of. I have never used the bovine vaccine virus of Dr. Abbott, but I have of most of the propagators in the United States; and I have never been able to attain more than sixty per cent. of successful vaccinations from bovine virus. Now, what are the reasons for abandoning humanized vaccine virus at this time, when it has withstood the test so long? The first objection urged this morning was that we cannot rapidly vaccinate large numbers of people; thousands of people, for instance. Well, I say if there is any one thing about which all physicians, myself included, are a little careless, it is about vaccination. We ought not, under any circumstances, to put off vaccination so that we shall be compelled to vaccinate the people by the thousand; that should never be. It ought to be attended to, and we ought to vaccinate the people in the daily rounds of our professional practice, carrying it on constantly and steadily, and not by fits and starts. Unfortunately, we have to do it in large quantities now. The second reason is the possibility of the inoculation of syphilis and other diseases. We have nothing to do with any other question here than that of syphilitic inoculation, because, as to all the other diseases that I know of, that are charged upon humanized virus, the objection as regards them applies with equal force to bovine virus. Now, as to syphilis; in the paper referred to by me as having been read before the State Medical Association of Georgia, I attempted to show that, in submitting to the operation of vaccination with humanized virus, we do not subject ourselves to any more danger, according to

the number of cases which have been alleged to have resulted in syphilis, than follow in very simple operations in surgery; and the number of each is detailed. If any member of this Association desires to read this paper at his leisure, I will take pleasure in sending it to him. Now, if there is one thing important above another, it is that when a man, woman, or child is presented for vaccination, that one vaccination shall thoroughly infect, if possible. Before I came here I was called to see a child in convulsions, and examined her and found there was no typical sign of vaccination, and I desired to vaccinate the child, and the mother would not permit. Another one I saw had a strawberry blossom, which is in no sense preventative of contagion. I found it so in a number of instances, and also that a number of the most prominent men of Georgia have found the same thing. Every one of them complained of the unreliability of vaccination. In my own city the only physician who expressed himself as pleased with the bovine virus was my friend, Dr. Coleman; but he told me that he had revaccinated himself and his wife, and it would not take; I told him he had better try humanized virus, and he did it, and they had typical scars. I do not know whether any other physician than Dr. Coleman was pleased with his experience or not. I do not say that it is always that way; but there are so many objections that can be alleged against it that I think the title, "The Uses and Abuses of Bovine Virus," is a very correct one. I think it is a very important adjunct in the subject of vaccination. We vaccinated more than two thousand people with bovine virus, in the city of Augusta. The city physicians were under my direction in the use of it. It was virus obtained direct from one of the best propagators in America; and the daily reports, when the time expired, showed so many failures that I frequently took my case, which I carried with me, and revaccinated with humanized, and frequently succeeded with it. Now, there are many other prominent objections to bovine virus, for instance, the delay; sometimes I have seen twenty-one days pass before the typical vesicle appeared. I have frequently been called in and found a case of small-pox, and several of the family had never been vaccinated. Now, it is important that you inoculate that family with virus that will run its course without delay. I do not expect to be able to discuss this question in the time allotted to me, but only to make this statement, that if any person desires to investigate the question of vaccinal syphilis, and also the points in relation to bovine virus, at length, I will take pleasure in sending him my paper on the subject. And again I say that Dr. Abbott is to be commended for his frankness, and the modesty of his claim. Dr. Martin, in a lengthy article in the *North American Review*, discusses this theory. His own statement is, that he vaccinated several people, and with that he has stamped out the epidemic of small-pox, both in military and civil life. Now, I want no better testimony than that of Dr. Martin. About vaccinal syphilis, I want to ask, in this body of distinguished men, if any man here has ever seen a case of undoubted and unquestioned vaccinal syphilis? If they have, probably they will state it. It is an objection now very

commonly urged against humanized virus, and the only one which does not apply to bovine virus; and against it can be urged the utter unreliability of bovine virus.

Dr. DEVRON, of New Orleans. — Mr. President, two years ago I was Inspector of the Board of Health in New Orleans, and in that capacity had use for vaccine matter; that was in the days when our late President (Dr. C. B. White) was President of the Board, and he was one of the first to use bovine vaccine in New Orleans. The vaccine of that time was obtained from New York, and the circumstances at that time, during the three years that I performed the service, compelled me to make many vaccinations. On one occasion I remember using four hundred and twelve quills, and using rapidly that number, in a jail where a convicted felon was taken sick with small-pox, and could not be removed from the jail, owing to the fact that the small-pox hospital was insecure, and at the same time it was necessary to protect the other prisoners. The vaccine was ordered from New York, and obtained by return mail. With the assistance of three physicians, two cutting and two rubbing the quills, we vaccinated every man, woman, and child, and even the officers of the institution, numbering four hundred and twelve in all. Our work was performed in less than three hours, and we never questioned who had been vaccinated before or not. The result was four hundred and one or two successes; and the failures were of persons who had been vaccinated before, and had marks. The same success met the use of the vaccine outside, in individual cases, and in families infected with small-pox. I have repeatedly vaccinated infants at the mother's breast, the mother having small-pox, and allowed the child to suck within forty-eight hours after the vaccination, without ever having a single case of the transmission of small-pox, though sucking the mother's milk. With that experience I, myself, recommended the bovine virus in my reports to the Board in 1874 and 1875. I must say that within the last year, since the new farms breaking out everywhere, and the increased demand for bovine vaccine virus, my success has changed; but it is not because bovine vaccine virus is less efficient than before, but because two things exist: either it is prepared carelessly by the parties producing it, or too much is extracted from each pustule, or the dealers from whom we receive it are not careful in obtaining it fresh, and do not notify us of the date of its production. If the manufacturers and producers of bovine vaccine virus wish to maintain their character for the reliability of the material furnished, — and they wish to make this material safe, — they should not only do as some of them do, put their names and signatures on the packet; but mark the date, and guarantee the success of the material, and agree to accept its return if it is not successful. In New Orleans we receive it through the wholesale houses; they give us a package, and we know nothing about it. Now, this year my success has been very poor —

Dr. FOSTER. — Mr. President, I would like to ask Dr. Devron about what degree of success he has met with.

Dr. DEVRON. — Mr. President, I will say to Dr. Foster that I did

not succeed one time in ten. With the vaccine obtained from New York I was successful almost every time. Now, my opinion is that this is on account of the large demand for bovine vaccine recently. This year and last they have not been as careful as they might have been in selecting their animals, or in choosing the time for removing the virus. Again, our retail dealers and druggists, selling it to us, have not been careful in selling us fresh material.

Dr. Beckwith, of Ohio. — Mr. President, it cannot be denied that there has been, within the last year, a growing feeling among the people and among the profession that bovine virus does not accomplish what it has in years gone by. For thirty years I have used bovine virus in my practice, more or less, and for the first fifteen, or sixteen, or twenty years I used humanized virus; occasionally we had bad effects, in the form of erysipelas, and other similar troubles, but nothing that ever assumed a dangerous character; and I can say the same with reference to bovine virus, except within the last year or two, when the symptoms have been more severe, and almost gangrenous. But there is some cause for this. There has been a great demand for bovine virus. Telegrams have come from all over the world to forward vaccine virus, and the propagators, like other men, anxious to make money, have sent out spurious material, or they have taken less pains, and sent out among physicians, quills that contained pus instead of lymph, and the result is ulcers and gangrenous sores. Now this is a great evil, and must be met. The people live in an age that demands the reason and cause for everything, and they will demand the reason for this. They must be protected, and they demand pure virus. Now, how can this be done? Simply in this way: Let the government take charge of the vaccine establishments; let us do as they do in Belgium. There the vaccine virus is provided by the government; and that is the only way, in my opinion, that we shall ever get reliable virus. Every vaccine propagator this year has no doubt made money. The demand has been so great that they have lined their pockets, regardless of the public health. I am told that as high as fifteen thousand points have been saturated from one cow; while the usual number, as Dr. Griffin has stated, is about from eight hundred to twenty-five hundred. Old cattle have been vaccinated, and I was surprised at the statement in the doctor's paper that he had been using old cattle. We all know that cows may become tuberculous; all know that to be true, and that we can have the same disease engrafted upon our systems. We should prevent the people from being exposed to this disease. I say, give us a law that will compel propagators to give us pure virus. They have nothing to restrain them now; there is no law to say to them, you shall not send out spurious virus. There is no law that says to them, you shall not send out points loaded with poisonous pus. Now, I say the reason that small-pox has spread so alarmingly is because of the impure virus furnished us. Look at Pittsburg, with a population of one hundred and seventy-seven thousand people, — they have two thousand seven hundred and sixty-two cases, and yet they have good health officers. It is simply

from the fact that their virus is impure. Take Cincinnati, where they have had that disease prevailing for months, regardless of health officers. There have been twenty-six vaccine establishments established over the country, and still that disease is spreading every day! I ask here, if vaccine virus accomplishes what we know it will, why this disease was not arrested? We all know that Chicago has one of the most active health officers perhaps in the country, and one who would gladly take the bull by the horns, and stamp out the disease if it were in his power; but we find the disease prevailing to an alarming extent in Chicago. In 1881 and 1882 there were two thousand two hundred and sixty-seven cases. Why is this, when these efficient health officers are at work? Simply because the virus was not reliable. I find, from January 1st to October 1st, they have fifteen hundred cases and five hundred deaths, and the disease was wearing itself out. In January they had one hundred and thirty-three cases; in February, one hundred; in March, eighty-four; and so on down to the last month, when they only had twelve cases. Now the disease had worn itself out, and stopped for that reason more than because vaccination accomplished it. And yet we all know that vaccination will prevent the spread of small-pox, if it is rightly and properly done. Now, what percentage should be effectual? Dr. Mears, of London, says that ninety-nine cases out of a hundred, if the virus is good, will be successful, if the operation is properly performed. Dr. Lindsey says, if it is well done we have little to fear. Dr. Martin says that vaccination is almost always successful, and among the thousands of cases that he vaccinated he cannot call to mind one where small-pox afterwards prevailed. I have vaccinated a young man three times, and still he had varioloid. This occurs all over the country. Letters from fifteen different States, which I have in my possession, say that at least from forty to sixty per cent. of the vaccinations have failed this present year.

Dr. E. L. Griffin, of Wisconsin. — Mr. President; all honest men are not dead. In answer to my brother who has just taken his seat, we should infer that there was no conscience among the propagators of animal vaccine. It may be that, like other men, we are human, and liable to mistakes, and liable to misfortunes; but there is some conscience still. There are some men that have an honest purpose, and that are not entirely governed by the Almighty Dollar. Now with regard to the criticisms made on the prevalence of small-pox in the city of Chicago, and the continued prevalence of small-pox there. I submit whether it is fair for such a criticism to be made, without the palliating circumstances are stated. I have furnished the city of Chicago for seven years, in its Health Department, with the virus with which it has prosecuted its work. Dr. DeWolf has stated, in a public manner, that of the large number of children vaccinated during his administration, admitted to public schools, not a single case of varioloid or variola, has occurred. Now we want to remember and consider a number of facts, when small-pox gets into a district. There are some districts in the city of Chicago, inhabited by a foreign population, almost exclusively opposed to vaccination,

and resorting to all sorts of tricks to deceive the health officers, and cover up the cases of small-pox until the disease has pervaded the whole neighborhood. It is not surprising that small-pox spreads to such an extent among such a population as that. In low, marshy districts where all the conditions are favorable to its spread and its malignancy, we, as candid men, must admit that a health officer has some work to eradicate the disease, even with the very best material he can find. Now nothing more in this direction. A word with regard to the paper that was presented to us this forenoon, — a very fair, instructive, and truthful paper, misleading our thought, I think, in two respects, however: first, as to the propriety of using animals of the age suggested; and, secondly, as to the frequency and commonality of cases of spontaneous cow-pox. From those two thoughts, or the inference which it was designed we should draw from them, I dissent. Cases of spontaneous cow-pox are rare, very rare. Cases of spurious cow-pox are very common. They have come under my observation many times. They have come under the observation of other propagators very many times. We have traced it; we have studied them thoroughly; we have proved them, and we know them. I should doubt, and I should deprecate, the propriety of vaccinating cows certainly above the age of four years. I think there are possibilities lying beyond that line that we should avoid. Now, with regard to this subject of animal vaccine, we are like other men: we swing one way, and we swing another; we seek for truth in this direction, thinking it is there, and then we rush to the other extreme, thinking it is all there, — when the medium is the happy point. This thought applies to human and to animal vaccine. I am a believer in humanized vaccine virus, properly selected. I am a believer in bovine virus properly, wisely, and skilfully propagated. Nearly a century ago the gentle and submissive beast gave her fluid to suffering humanity. It was a boon such as humanity has never received from any other source. She retired for three-quarters of a century, and then again came upon the stage, bringing, I believe, a purer article than in the earlier days. The question before us is not a tirade against animal vaccine. It is a fact, an accepted fact, that animal vaccine is one of the most valuable things that humanity possesses. It is a great boon to humanity; we accept it; we cannot do otherwise; no man can do otherwise than that. And when I say this, I do not say that humanized virus may not answer the same purpose. But the question is not against bovine virus, but the question is for us to guard its propagation. There, my friends, is where the difficulty lies. For eleven years I have studied this subject with all the ability and with all the conscience which God has given me, and I know I have done it honestly. And when a man gets up here who has never seen a creature vaccinated, who has never been in a stable where the animals for propagating purposes are kept, with all due deference to that man, I say he knows but very little about it. He knows nothing about it. He does not know any of the lines in which danger lies, which the conscientious propagator must observe and must avoid. Now, last year we passed through such a state, such a psycho-

logical state of the public mind as none of us will ever witness again. Through various causes — but principally through the influences of the press — the whole public mind from East to West, from North to South, was excited upon the subject of vaccination. From the first of December until the first of March, or the last of March, there seemed to be no cessation in the demand for vaccine points, for animal vaccine; and every institution in the country was demoralized. Orders were coming in far beyond the possibility of filling them. Every man made the best effort to do all he could. Every man fell into error, and did things that he ought not to have done. It was a pressure that no man knows anything about, only the men that were under it. Imagine yourself receiving orders for fifty thousand points a day for weeks and months where there was no possibility of filling them; where the orders were urgent, — orders as urgent as language could make them, and the cry coming from all directions. Every effort was made; stables were enlarged, and new persons were worked in; and to supervise the whole of this was entirely beyond the capacity of any one person to do. This important work had to be largely entrusted to persons who were unaccustomed to it, and who had no practical knowledge of it. For these reasons every man failed. Even our brother Martin, who claims to be immaculate, failed in this respect, and fell into error. Virus was sent out that ought not to have been sent out. Under the pressure, heifers were used that ought not to have been used. Cases were pressed beyond the possibility of success, and the largest number of points were made; but I don't believe that any man ever collected fifteen thousand points from one pustule. That is utterly impossible and preposterous, in my judgment.

Dr. FOSTER, of Georgia. — Mr. President, the National Board of Health stated that the Inspector of the Chelsea, Mass., vaccination farms, found that they charged as many as five hundred quills from one vaccine pustule.

Dr. BECKWITH, of Ohio. — Mr. President, Dr. Lindsay, of Yale College, states that it was reported in the newspapers, and had not, as yet, been denied, that as high as fifteen thousand quills had been procured from one cow, and that is pretty good authority.

Dr. GRIFFIN. — Mr. President, that is merely a newspaper report. Such a thing is not possible. I was going on to say —

The PRESIDENT. — Dr. Griffin, I am obliged to call your attention to the fact that your time has expired, under the rule adopted by the Association this morning.

Dr. FOSTER, of Georgia. — Mr. President, I move that Dr. Griffin's time be extended.

The motion was agreed to.

Dr. GRIFFIN. — Mr. President, I wish to impress this thought upon the Association. I want to beg you not to carry your prejudices against animal vaccine too far. It is just as good now as it was a century ago. It will be just as good a century hence as it is now. Whatever failures came to it came by the failure of unwise manipulation.

There is where the painful part of the whole question comes in. The question is, What shall we do to guard this sacred interest? Shall we permit A, B, and C, who have no knowledge of medicine, who have no knowledge of vaccine diseases, who have had no experience in the matter, — shall we allow them, for pecuniary considerations, to propagate animal vaccine, and come before the public? Shall we endorse them? These are questions that require our thought. I do not profess to see the end. I do not profess to see the way out of it. I see difficulties; I know, as I remarked, the difficulties that lie along the line of propagation; they are many. I could entertain you an hour with repeating them; but it would not be wise for me to do it. It seems to me that the propagation of animal vaccine should be conducted by those who are skilled, — and it should be regarded as one of the highest of skilled labors, — and held there by public sentiment, and the voice of the profession, if not by the law of the land. And, when we can do this, I think we may be delivered from many of the misfortunes which have come upon us. Up to last winter, in my position, I heard but very little complaint against animal vaccine, very little. All this has blossomed out and grown under the pressure that was brought to bear during the season of excitement. With regard to the percentage of success attending the use of animal vaccine, I think it will compare quite favorably with that resulting from the use of humanized virus. I think that a close analysis will drop it but a little below that obtained by arm to arm, or from fresh, humanized vaccine virus. My observation teaches me that there is no virus so sure to take as that taken at the proper time from a well-matured pustule on a child which has been vaccinated with bovine virus. I think if a person is vaccinated with that sort of lymph, if there is any susceptibility in the system it will be reached. My observation in regard to the Pennsylvania animal vaccine is that, if properly gathered and properly used, it will compare favorably with the best form of humanized virus. I think it will fall somewhat, perhaps, below it; but not very much. I expect from ninety to ninety-five per cent. of success in primary cases with bovine virus. I think that would be a fair per cent. I expect the virus is capable of proving results in that proportion of cases. None can tell how much embarrassment comes to propagators through the ignorance and through the want of skill in the physicians who use the points. I have had experience with some of the best men in my own State; men who stand the highest in our profession complained to some of my friends for two years before they could command reasonable success with the points. They would write me numberless letters, saying that they had used them on so and so, and they had failed. I have repeatedly sent them virus which I knew absolutely, from my own trial, to be pure and reliable; that I had taken off with my own hands, and knew that it was as good as it could be, and sent it to them, and they have reported failure. There is such a difference in the way that vaccination is performed that we cannot arrive at the percentage with any degree of accuracy. I have learned this, that some of the most excellent men in the profession, who can treat a fever

wisely, or amputate a limb skilfully, and do any and all of the major things, when they come to a little thing have no capacity at all; and that is the reason of a great number of failures.

Dr. Hillis, of Iowa. — Mr. President, I have had some experience in regard to the use of vaccine virus, both bovine and human, that is probably worth something. It has been eight or ten years — I have forgotten the exact date — since I had the honor of being the health officer of my city, and a public vaccination took place. I appointed my vaccinators, or the physicians who were to do the work, having first districted the place, and used humanized virus. The failures were about twenty-five per cent. in primary cases, that is, of first vaccinations. Now, this year I had the pleasure of occupying the same position, and I had the city revaccinated, using bovine virus. That virus came from Wisconsin, I think, and part of it from Dr. Griffin's farm; I do not know where the balance came from. I do not know who furnished it, but I got it from a druggist in my city; I was too busy to do the ordering myself. We vaccinated fifteen hundred people, I believe, — men, women, and children. That, of course, did not include the whole city, for the reason that a great deal of private vaccination was done by the physicians for their patrons and their friends; but we vaccinated about fifteen hundred, in round numbers, and we used bovine virus exclusively. We had about ten per cent. of failures. We had some cases of eruption — vaccine eruption — and we had a few indolent ulcers; but out of the whole number not more than five or six were reported, and you might say that the number was so small that it is hardly worth while to take it into consideration in a discussion of this kind. Now, like the Doctor, I believe that the bovine virus is as good now as when used by Jenner, that is, if the animal is pure and healthy and the vaccination is properly executed. I apprehend that that is the great secret of failure in many cases, as the Doctor has intimated. We who have not visited the farms, and have not been present when this work of inoculating the animals was going on, know nothing about the difficulties that these gentlemen labored under when this great pressure was brought upon them, when small-pox was prevailing throughout the whole country, and the whole country panic-stricken as it was. Now, I differ again with my brother in regard to another declaration of his; I am not willing to endorse it in this Public Health Association, — I refer to the statement in regard to the small-pox wearing itself out in the city of Chicago. It may have ceased for lack of material, if that is what he means, but it certainly did not wear itself out; it must have been prevented, or headed off, either by the lack of material or by vaccination. Now, so far as my individual preference is concerned, — I have been speaking in a public capacity, that is as a health officer, — so far as my individual preferences are concerned, in my private practice, I would prefer humanized virus, provided I can do the selecting. If I can select the subject from which it is taken, and know the history of the child and the family, and can trace it back and know it to be healthy, I prefer humanized virus to bovine virus, because you cannot trace the his-

tory of the animal in that way, although you may be reasonably sure that you have a healthy animal. I think some measures ought to be taken, or some expression of sentiment in some formulated way should be had, in regard to these public vaccine-farms, to use that phrase; there are too many of them springing up all over the country. Men that don't know a healthy animal from an unhealthy one have charge of them; men who are not like Dr. Griffin; men possessed of no conscience, in many instances, doubtless. They do not care whether they send out to the public pus, or mucilage, or what, on their points; and hence the failures. I think it is well that this discussion has arisen, and I hope that some formulated, plain expression of our opinion may go forth before we adjourn.

Dr. Bailey, of Kentucky. — Mr. President, we have had a very good paper, and a very excellent talk, by Dr. Griffin. One point attracted my attention, — the disagreement or dissent made by Dr. Griffin as to the frequency of this spontaneous development of pock in the cow. May not this be the source of much of the failure that has come, — that very many of the points we have had sent throughout the country have been collected from heifers where spurious cow-pox had been used? Some one stated that he has personally examined eleven, and he knew about a great many more. It seems to me that, whatever else may be the source of the trouble, very many of these propagators have sent us virus that primarily does not come from genuine vaccine.

Dr. Hosmer A. Johnson, of Illinois. — Mr. President, I do not desire to take up the time of the Association in discussing the question generally, but I want to say one word in regard to the course of the disease in the city of Chicago; and I do not propose to go over the history of the epidemic as it has existed there and in the North-west for the last few years. But during the latter part of the winter our health officer told me that in the small-pox hospital only five per cent. at that time could speak the English language; while of all the cases treated in the city in private practice, and by the public authorities, a very large proportion of them were foreigners and persons who had recently arrived in this country. Vaccination was carried on and insisted upon by all the influence and power which the public authorities in the city possessed; but there were very many people constantly arriving there who strongly objected to submitting to the operation. We have no compulsory law, except in so far as it excludes from our public and private schools children who have not been satisfactorily vaccinated. When a case occurs in the neighborhood we have the right to insist upon the vaccination of all the inmates, or to insist that they shall separate themselves from those in the neighborhood. Now, with all the influences, and all the activity, and all the knowledge of the health officers of Chicago, small-pox continued there; and for the reason that there was a continual stream of new cases, who had not been protected either by primary or secondary vaccination, coming to the city. It began with the advent of warm weather, and diminished somewhat later; but not until this stream from New York

westward became disinfected. Now, when will we cease to suffer from this disease? When at the seaboard, when beyond the sea, this process of disinfection is commenced, and not until then. When there shall be vaccination at the port of departure, and vaccination on shipboard, and vaccination upon arrival in New York, and vaccination upon the emigrant trains on their way westward, — then we will begin to feel the value of this process as a protection to our city. Now, I believe that is the essential thing; and there is one fact that Dr. Griffin mentioned to which I wish to bear testimony, and that is as to the fallacy of statistics as to the failure or success, unless we know definitely the procedure which is employed in the process of vaccination. I believe very much of the failure of my professional friends is due to the want of tact — not want of knowledge — but to a want of tact in the performance of this little operation. There is one more point in that paper which I wish to refer to, and that is to the statement in regard to the dangers in the use of humanized virus in the way of the introduction of syphilis into the subject vaccinated. Now, it seems to me, that the statement there would justify, on the part of those who have not carefully studied the question, the inference that this danger is somewhat greater than I believe it to be. I think we should accept quite a number of the outbreaks of syphilis, supposed to be due to vaccination, with some degree of hesitation. In the first place, we must admit that there are elements in the history of the cases which we cannot properly estimate. We do not know how much may be hereditary. We do not know, for instance, in cases where vaccination is supposed to have introduced syphilis into the army, how many cases there may have been of primary syphilis previous to vaccination. We do not know, either, how fully we may rely upon the judgment and knowledge of the observer in the diagnosis of the cases. I am quite sure I have seen some cases that were supposed to be syphilitic, that did not seem to me to present the characteristic marks of that disease at all; but were simply modified sores, described by our best authorities who have written upon the subject of vaccination. Now, in regard to the danger and difficulty in the way of propagation. I have seen something of it, and I can understand how, during the last year and a half or two years, it has been possible to introduce into the market a large amount of matter supposed to be vaccine matter, which, if it contained true vaccine virus, contained it only in small proportions. The demand was so great that the work was not only entrusted to conscientious and competent men, but to those who proved themselves to be without conscience and incompetent. The demand was so great that I know of persons in the North-west, who had no knowledge either of the process to be resorted to, who were not able to diagnose the vaccine pustule, who had no information of the first rudiments of knowledge as to pathology, or as to the elements of danger in using pus and the matter from ulcerations, — I know these persons set up for themselves vaccine establishments and went to propagating. I visited some of those establishments. I saw the process of developing these pustules, and saw where

the animals were kept, and learned something of the history of these individuals. Now, this stuff was sent out and went into the market, and you purchased it of your druggist. It was put up in packages, and looked as though it was clean; but it was the foulest admixture of excrement, of urination, of stable dust and dirt, with pus, and possibly a little bit of vaccine in it. That a larger number of offensive ulcers, that a larger number of fevers, and a larger number of cases of erysipelas, were not developed from such matter, seems to me to be stranger than that there should have been the number that there has been. I believe in humanized virus, and I believe that the danger from it is very small. I believe in bovine virus, and I believe its efficiency is great if it is properly cared for in its propagation, and if you get it from honest men, — and there are some such. I see no reason to believe that we cannot trust them just as our patients trust us for our character, for our faithfulness, and for our conscientiousness. As they trust us, we can trust some of our professional brethren in the same way. We have to do it. It is the only satisfactory guarantee we can ever have. State Boards and National Boards cannot enter upon this work with any more certainty of giving us reliable material, than the man who feels that he stands before his professional brethren with his high character and reputation for conscientiousness and integrity at stake. For a year and a half after the fire in Chicago — you know that was a great epoch with us, and we date everything from the fire — I had the responsibility of caring for those who were turned from their homes, so far as their medical wants were concerned, and over sixty thousand persons were vaccinated with humanized virus. About forty thousand cases were followed up two weeks, and some of them three or four weeks, until I knew definitely, by the persons who were employed in the Relief and Aid Society; and I have now in my office the statements and the original notes made by these gentlemen, following the forty thousand persons vaccinated with humanized virus. There were about five or six cases attended by somewhat offensive and painful ulcers. Soon afterwards there developed a very slight epidemic of erysipelas in the city, and a few cases had a sort of erysipelas inflammation surrounding the point of vaccination. There was no case of death; there was no case where there was the slightest sign of any syphilitic infection. Twenty thousand cases more were vaccinated that I have no record or history of; but, although we have not the particular history of their vaccination, I have never heard of any serious results following the use of humanized virus in the twenty thousand vaccinations.

Dr. Jos. H. Raymond, of Brooklyn. — Mr. President, I desire to say a few words to add to the testimony of the city of Brooklyn to the value of bovine virus. For more than thirty years no other virus has been used but the bovine virus in Brooklyn. Since that time we have had two epidemics, — one in 1875, and one in 1876. Each was subjugated, as we believe, by the free use of bovine virus, and for nearly two years not a single case of small-pox has occurred in the city of Brooklyn; and since that time bovine virus has been used exclusively. I think that Dr.

Griffin has struck the key-note, when he says that the difficulty in using bovine virus is in the kind of bovine virus. I believe there is as much difference in the kind of bovine virus as there is in different watches. And I think we would be just as much justified in condemning watches generally as time-keepers, because there are some watches put upon the market that are not to be relied upon, as in condemning all bovine virus because success is not met with in every instance. I had occasion, in the last year, to compare the results reached by the use of the virus of different propagators, and, without mentioning names, I would simply give the proportioned results, showing that here undoubtedly is where the difficulty lies. Two experienced vaccinators were selected, and I say here that I believe there is as much difference in vaccinators as there is in the virus. Many public vaccinators, that I have seen, permitted the blood to run down the arm of the child in streams; and we all must agree that statistics from such vaccinators are entirely unreliable. Two experienced vaccinators were selected, and the cases which were selected were in every instance primary; and no child that was unhealthy, or had the least symptoms of lacking perfect health, was accepted; and the time was the same, so that all the conditions were exactly alike as near as possible. From one kind of virus we had about twenty-eight per cent. of successes; from another, about sixty, and from another over ninety. Now I say, therefore, that the difficulty is not in the bovine virus, as a virus, but in the kind of bovine virus. I served a time as vaccinator myself, and I remember well one who was associated with me, when the question was asked which end of the point he was to rub in, said it made no difference; it was all the same. I imagine that the same difficulty has arisen from this fact. Men have been careless about the kind of virus they selected; and still more difficulty arises from the lack of skill with which the virus is inserted. We never could have protected the city of Brooklyn from small-pox with humanized virus. Although it is true that our duties compel us to vaccinate children as they are born, there are two difficulties in the way. One is that the great majority of births occur under the charge of midwives. And certainly there is a very great objection on the part of a great many to having their children vaccinated, unless there is actual danger of small-pox present; and, consequently, between the epidemics there is always a great number accumulated who are not vaccinated. If we were compelled to rely upon humanized virus we would be powerless. It seems to me, therefore, that although humanized virus is very reliable, yet, looking upon it from the stand-point of the American Public Health Association, as sanitarians, we must rely upon bovine virus; and I am sure that we can place our reliance upon such virus with perfect trust and confidence, if we are sure that we have obtained a good specimen of the virus. It seems to me that the remedy is in our own hands. If we go to the corner druggist, and take any specimen of virus that they give us, and insert that in the arms of our patients, we must not be surprised if we meet with failure; but if we do that we are not doing our whole duty by our patients. We

do not step into any drug-store and get a prescription made out, when we know the materials require to be weighed out with great care and exactness, and accept anything they choose to give us; and when we exercise the same caution in regard to this matter of bovine virus these unreliable propagators, that spring upon the market whenever there is a great demand, will no longer be heard from.

Dr. HOLMAN, of Illinois.— Mr. President, in the little experience that I have had in the matter, I must confess that my failures have sometimes been due to a lack of care. I have been called to vaccinate schools, where there were, perhaps, fifty to a hundred children, and, in the hurry to get through with them, I fear sometimes I was not as careful as I should be; and I think the difficulty arises as much from such facts as this as from the impure quality of the virus. I say this much in justice to the propagators, who, we will hope, are honest and sincere in furnishing us with virus.

Dr. E. M. MOORE, of New York. — Mr. President, I have very little to say; perhaps I may mention, however, my success in vaccinating forty thousand people in the city of Rochester, and the entire arrest of the epidemic, although we had three cases imported from Chicago, which developed two others in each house. We used exclusively bovine virus, and it was obtained from Dr. Martin, and also from a vaccine farm near the city of New York. This, however, is only a general statement, and I only take a moment to make it. But I want to ask a question, as the Association is about to disperse. The statement was made by the gentleman who read the paper this morning that there had been no case whatsoever of any cow disease following vaccination. Now, I had a case in Rochester that puzzled me, and very many of my friends, and I have never been able to obtain any satisfactory information about it. I asked Dr. Harris to see the case with me, knowing his large experience in this matter, and I would now like to ask whether any gentleman has ever seen anything like it, for the reason that it was purely a disease that followed vaccination. The child was vaccinated with bovine virus, and then at the end of about three weeks, when the pustule began to — or rather, I should not say pustule—I hardly know whether to call it a vesicle or a papula; but it seemed that there was a little secretion upon the surface. This papula remained three or four weeks, so that there was a covering of the space that was elevated, say between an eighth of an inch and a quarter of an inch above the surface, and an inch and a half in diameter; and then there were three or four other spots, and the peculiarity of the disease was that it remained and did not get well for six months. It would seem to get better for a while, and then get worse again, and so remained in this condition. We expected, as a matter of course, that a pit would form. On the contrary, it came off and left the skin entirely free from any depression. Now this whole thing is so entirely new to me that at the close of this discussion I desire to hear any of the members of this Association who have had more experience in this matter give me some light upon it. Now, one word more. Some years ago I recognized

upon the hand of a patient of mine three points of elevation. They were larger than ordinary vaccination, by nearly twice as large. They were elevated above the surface level upon the top, clearly papules. I connected this with the case of the child. It was so peculiar, and was such an odd expression, that I asked the man whether he had not been near some cow, or some animal. Yes, he said; about two weeks before, his cow had choked with a potato, and he put his hand in the creature's mouth to take the potato out, and as it came out he recollected that the back of his hand had been a little scratched, and from this little abrasion came these very peculiar papules. He recovered; but I was perfectly convinced that the manifestation was due to some peculiar condition of the cow, and that he was inoculated. What it was I do not know, I have never been able to learn, and I hope that some of the doctors here can tell me something about it. When I saw this case of the child, following so closely after vaccination, I recognized the same appearance, only with a little more vascularity.

The PRESIDING OFFICER (Dr. Gihon in the chair). — Gentlemen, the hour is getting late, and the discussion is interesting, and evidently not yet ended. I would suggest that it be postponed until to-morrow. I know that there are one ort wo gentlemen absent, who desire to speak on this subject; and the discussion may be taken up to-morrow, and then some resolutions formulated, to express the opinion of the Association.

Dr. FOSTER of Georgia. — Mr. President, I will renew the motion I made this morning, that this matter be now referred to the Executive Committee, with the request that they find a time and give us a place on to-morrow's programme for the continuation and conclusion of this discussion.

Dr. HUNT, of New Jersey. — Mr. President, I hardly think the motion is necessary. I am sure that the Executive Committee will in some way arrange it so that this discussion can go on to-morrow, after the reading of the other papers.

The PRESIDING OFFICER (Dr. Gihon in the chair). — The Chair is of opinion that the better way is to leave this matter to the discretion of the Executive Committee; and, if there is no objection, Dr. Foster's motion will be taken as agreed to. Is there objection? The Chair hears none, and it is so ordered.

The hour for adjournment having arrived, the Association will stand adjourned until this evening, at seven o'clock and thirty minutes P.M.

EVENING SESSION. — 7.30 O'CLOCK.

The PRESIDENT. — The Association will come to order. Certain announcements by the Secretary will now be made.

The SECRETARY. — Mr. President, I am directed by the Executive Committee to report, as recommended by the Committee for active and associate membership in the Association, the following names. (See list of members elected.)

The PRESIDENT. — The Association has heard the nominations for active and associate membership, as recommended by the committee. What is the pleasure of the Association?

Dr. WIGHT, of Michigan. — Mr. President, I move that the Secretary be instructed to cast the ballot of the Association for the election of the several candidates to the class for which they are recommended by the committee, and that they be declared so elected. (See list of members elected.)

The motion was agreed to.

The SECRETARY. — Mr. President, I hold in my hand a ballot bearing the names of the gentlemen who have been recommended for active and associate membership by the committee, which I cast as instructed by the Association.

The SECRETARY. — I am instructed by the Executive Committee to report that, owing to the pressure of business, they have not been able to act upon other names. Quite a number remain which will be acted upon to-morrow morning. I am also requested to reannounce that the rule of the Association in regard to discussions — that speeches shall be limited to ten minutes, and no member allowed to speak more than once on the same subject, if there are other members who desire to speak — will be strictly enforced.

The order for the evening is a paper on "The Work of the National Board of Health," by Prof. James L. Cabell, of Virginia, President of the National Board of Health.

Prof. Cabell read his paper. (See page 71.)

The PRESIDENT. — Before discussion upon this paper is reached the Executive Committee ask to submit to the Association a series of resolutions embodying the views of the Executive Committee, as formulated by the Advisory Council, which will give basis, groundwork, and definite form to the discussions of the evening.

Dr. EARLY, of Kentucky. — Mr. President, before the resolutions are read, I move that the thanks of this Association be tendered to Dr. Cabell, for his able, interesting, and detailed report from the National Board of Health.

The motion was agreed to.

The PRESIDENT. — The Secretary will now read the resolutions submitted by the Executive Committee.

The SECRETARY. — Mr. President, the Executive Committee, in consideration of the paper of Dr. Cabell presented to it, passed resolutions in a general way, expressing their own views in regard to the paper, and the action desirable under it, and referred them to the Advisory Council for its judgment and action. The Advisory Council, acting thereon, have modified the original resolutions sent to them by the Executive Committee, and re-referred them to the Executive Committee. That committee has slightly amended them, and now presents them with its recommendation to the Association that they be adopted. The resolutions are as follows: —

Resolved, That this Association has listened with great interest and satisfaction to the analysis and detail of the work accomplished by the National Board of Health, as furnished by the President of the Board; and that we commend its careful perusal to all upon whom, as legislators or sanitarians, devolves the care of the public health, not only as showing the scope of its faithful and efficient administration, but as suggesting and illustrating the permanent demand there is for a sustained national organization of this general character.

Resolved, That there is a work to be done by such a Board which cannot be done by any local or State Board, and which is not, and cannot be, adequately represented or fulfilled by any other branch of the national service, as illustrated in its inspections and inquiries into special conditions so serious as to be national rather than local; in its dealings with yellow fever and small-pox; in its plans for consular health bills from foreign ports and refuge stations for a wide coast range; in its internal care over river and railroad transportation; in its investigations into malaria and other wide-spread causes of disease; in its valuable scientific and practical inquiries into the causes and courses of epidemics; in its comparisons of statistical facts, and in its wide-spread distribution of information most intimately affecting the vital conditions of our whole population.

Resolved, That, while each State and each division of national service may contribute much aid in their respective spheres, we view with regret any curtailment of the functions of a Board so constituted as to represent and unify the health interests of the entire nation.

Resolved, That we counsel the National Board to continue all the work possible under its present restricted appropriations, and await with confidence the extension of its powers of usefulness, and that appreciation of its work for the past and its necessity for the future, which can but result from a calm and careful estimate of the safeguards requisite for national health and prosperity.

Resolved, That the Advisory Council of this Association, representing, as it does, the sanitarians of the various States, be directed to use all laudable efforts to place before the President of the United States and the Congress at Washington, and before members of Congress in their several States, the very great importance to the welfare of this country of such action by the United States government as shall increase, to the fullest extent, the means and powers of usefulness of the National Board of Health.

Resolved, That, so long as the United States government confines its maritime and inland quarantine service to the aiding of State and local Boards of Health, it is essential, for the best results, that such aid shall be through channels most generally acceptable to State and local Boards of Health, whose coöperation is requisite; and we sincerely believe that the National Board of Health is the channel most generally acceptable.

Resolved, That the confining of the work of the Board to cholera, yellow fever, and small-pox is believed to be in the highest degree injudicious. It should have the full powers for investigation of all preventable diseases conferred upon it by its constituting act, and be granted the funds necessary for this purpose, and this should be done irrespective of the action which may be taken with regard to quarantine.

Resolved, That the members of the American Public Health Association hereby pledge their individual coöperation in endeavoring to secure such national legislation as shall insure to the National Board of Health such material aid as may be needed in carrying out, with the greatest efficiency, all measures pertaining to the interests of public health.

Resolved, That the president, vice-presidents, and secretary of this Association be charged with the duty of securing the complete presentation to the authorities

at Washington of the full influence of this Association in favor of properly and permanently sustaining the National Board of Health.

Resolved, That the address of the President of the National Board of Health, together with these resolutions, and such other papers or resolutions as relate to this subject, be printed at once in pamphlet form, to the number of one thousand.

The PRESIDENT. — Before opening the discussion the Secretary will make an additional statement in regard to communications which have been received by him on the subject of the National Board of Health, but which, unfortunately, have been left at the rooms of the committee, at the hotel.

The SECRETARY. — Mr. President, in brief, they are a communication from Dr. L. P. Bush, of Wilmington, Del., a member of the Advisory Council, touching an interview with one of the senators of his State, and his own convictions in regard to the necessity of pronounced action in this body in aid of the National Board of Health; and also a communication from Dr. Joseph R. Smith, U.S.A., Medical Director Department of Texas, expressing his earnest belief that nothing is more important in the deliberations of this body than that it should give its countenance and support in the fullest sense to the National Board. The following are the communications: —

WILMINGTON, DEL., Oct. 7, 1882.

AZEL AMES, JR., M.D., *Secretary American Public Health Association*: —

Dear Sir, — I will not find it practicable to attend the meeting of the Public Health Association at Indianapolis; but I wish to place before you, to use as you think proper, my views upon one of the very important subjects which will no doubt occupy the attention of the Association. I refer to the present state of the National Board of Health.

I have intended for some weeks to address you respecting the action of the last session of Congress in relation to the Board, but have been waiting to have an interview with Senator Bayard, who has been absent on a tour to the Yellowstone Park. My interview with him on his return was not as satisfactory as I had hoped, owing to the pressure of other engagements upon him; but it seemed that the chief point which had been impressed upon his mind related to the conflicting interests of National and State control in matters pertaining to quarantine.

You, no doubt, are more familiar with the details of this objection than I am, both as to the special case or cases involved and the precise points of objection. I am aware that, in regard to the effort of the Board to establish an inspection of vessels at the Delaware Breakwater, a strong protest was made against it by the Philadelphia merchants. Theoretically, it was a wise and beneficent measure; practically, it was open to grave objections.

Doubtless the most embarrassing point in the executive action of the Board has been, and will be found, in the conflict which is always liable to occur between National and State powers. It seems to me that the only course of the Board on this point will be to assume only an advisory position, while a broad field, upon the cultivation of which the Board had entered, is still open in the minute and elaborate investigation of the causes and mode of prevention of disease, whether epidemic or otherwise, among ourselves, and in the stimulation and encouragement of the State Boards of Health in the performance of the various duties incumbent upon them. If the Board can only make it appear that a course similar to that

suggested above will be the one to which it will extend its operations; or, still better, propose, or have proposed, a bill to the next Congress limiting its powers to such duties as the above, I conceive that the proper appropriation could be obtained; otherwise I fear that the objection above mentioned will prove insuperable, and the Board will be arrested in the prosecution of its noble work.

I will see Senator Bayard, and, if possible, Senator Saulsbury, before the next meeting of Congress, and will endeavor to place before them the importance of the work of the Board, and the necessity of a proper appropriation to carry it forward.

I have just received from Dr. Smart, Secretary of the Board, a circular pertaining to this subject; and you will find the above remarks to coincide with the views expressed in the circular which you, no doubt, have.

I am very respectfully yours, etc.,

L. P. BUSH,

Member of the Advisory Council of the American Public Health Association.

HEAD-QUARTERS DEPARTMENT OF TEXAS,
MEDICAL DIRECTOR'S OFFICE,
SAN ANTONIO, TEXAS, Oct. 12, 1882.

My dear Doctor, — I regret that, in consequence of the yellow fever in this State, I shall be unable to get away from here, and be present with you on the 17th.

I want to urge, however, my professional brethren of the Public Health Association to take such steps as may seem best to promote the efficiency of the National Board of Health.

The usefulness of that body is sadly crippled by the want of funds.

The good work performed by the National Board of Health since its organization is enough to commend it to the confidence and secure it the good-will of every sanitarian. Its bulletin has promulgated information of immense value, and elsewhere not to be found.

No subject of greater importance than this can be brought before the Association. With good wishes to you all,

Very sincerely,

JOS. R. SMITH,

Surgeon U.S.A., Medical Director Dept. of Texas.

DR. A. AMES, JR., *Sec'y, &c.*

The PRESIDENT. — The paper of Dr. Cabell is now before the Association for discussion.

Dr. EARLY, of Kentucky. — Mr. President, it is not a desire to talk that brings me so promptly to my feet, but it is the fact that this is a matter that has weighed upon me for weeks and months past. In introducing the subject I do not know better how I can do it than in a response that I made to Dr. Smart, upon the reception of his circular in connection with national work. No physician who realizes his relation to the general community, or the relation of the National Board of Health to the people at large, can fail to realize the importance of the crisis which is upon us. I realize from my stand-point and geographical position the importance of these watchmen upon the towers, who have overlooked the entire field, and have seen the approach of future danger when you and I and other members of this Association were asleep and ignorant of threatening evil. My deepest sympathy has been with the National Board

of Health in the position in which it has been placed by the action of the last Congress. Gentlemen of integrity, the peers of any men in the country intellectually and professionally, by innuendo traduced by men who had not intellect enough to realize and appreciate the genius which presided over them! And why? I am not able to answer further than this. The intelligence that was arrayed, and is arrayed, upon that National Board of Health has been selected from the medical profession at large for its known capacity and integrity; and when the uninformed upon the subject of sanitation, and upon professional propriety, come up and cast innuendo upon the class of gentlemen who compose the National Board, that class of talent, and that class of professional men, I think it is about time we should look about us and determine from this day on until the last hour of our lives whom we shall send to represent us in the Congress of the United States. I have taken the trouble to examine into this matter for months past. I saw the storm brewing before it came upon us, and I have traced it back to this: nothing in the world except the whipper-snapper politicians, controlled by political desire, whose feet are upon the lower rounds, and whose eyes are upon the ladder above them; who hope, by traducing and vilifying those whom they never can be the peers of, to accomplish their political ends. It is all for political purposes. There is nothing personal in the matter at all. My doctrine of the appropriation for the Board of Health has always been this: Let the National Board of Health say what amount of money is necessary for the prosecution of their labor, and let the United States Government appropriate the money, and, at the same time, put aside the same sum as a reserve, and let the National Board draw on it if necessary. It is not for a section. In its broad philanthropy the National Board knows no North, no South, no East, no West. And such, I know, must be the feeling of every intelligent gentleman upon this floor to-night. And I think I know what must have been the feeling of every intelligent gentleman here when he listened to the concluding remarks of the able report that Dr. Cabell has just presented. I know that they were like my own. For my part my head goes down in shame that a government like ours, whose flag is hoisted upon every pinnacle from the north pole to the south pole, and from the east to the west, in the remotest bounds, should come to a point where its representatives in Congress say, we have so little interest in the preservation of health,—we have so little interest in regard to prolonging life,—we have so little interest in making those who live here as American citizens comfortable and healthy, that we will take from them all the safeguards by which they are surrounded in the National Board of Health! Now, Mr. President, those resolutions sent here by the Executive Committee are prospective, and I do not think altogether cover the entire case. For that reason I have a resolution in my hand which I propose to offer. It is a resolution in addition to the resolutions before the Association. If it is adopted by the Association, well and good; and if the Association sees proper not to adopt them, why, I have at least given utterance to my feelings in the matter. In conclusion, now let me say, so

thoroughly have I been wrought upon in the last two or three days in this connection, that I go home with the avowed determination never again to vote for or support any candidate, from constable up to candidates for Congress, who are not avowedly in favor of that National Board. Now, gentlemen, I present the Secretary with my resolution. As I remarked just now the resolutions of the committee are for the future. We want something for the present, and I offer my resolution for the present alone.

The Secretary read the resolution offered by Dr. Early, as follows: —

Resolved, That the American Public Health Association, as a body, approve of the action of the National Board of Health in all its action from its incipiency to the present time, and disapprove of the action of the last Congress in trammelling its usefulness and destroying its vitality, in that it counteracts the purposes for which it was created.

Resolved, That as a body we are in full sympathy with the National Board of Health in its present attitude, caused by said action of the 47th Congress.

The PRESIDENT. —Under the rule all resolutions must go to the Executive Committee. This one can be referred to that committee, with the recommendation that they report favorable to its adoption, if that is the pleasure of the Association.

On motion, the resolution was so referred to the Executive Committee.

Dr. BELL, of New York. — Mr. President and gentlemen, it occurs to me that there can be no reply made to Dr. Early's position, not only with reference to his denunciation, but to the knowledge he has displayed in seemingly to charge Congress and the powers that exist, with withdrawing all support for public health purposes. We have before us a most painful alternative, painful in that it took $100,000 from the people's treasury, and appropriated it to be spent, as I think they spent money two hundred years ago, for the murdering of people. If I speak severely it is because I feel deeply. It has been my fortune, good or bad, to have been cast in the face of that dreadful epidemic, yellow fever, under a variety of circumstances. I have no need now to be placed in the presence of the shot-gun quarantine, such as seems, by the public press, to obtain at Brownsville. It is hardly necessary to refer the members of this Association in their historical reading to the time, centuries ago, when a person afflicted with contagious diseases was confined to the place where he was, all his surroundings virtually saying to him, you may die there, but we must be safe and free. This, Mr. President and gentlemen of the American Public Health Association, is just what Congress has foisted upon us as sanitarians. They have established what they call a *Cordon Sanitaire*, which is a shot-gun quarantine on a large scale. When the National Board of Health came into existence it found innumerable shot-gun quarantines in the South. The sentiment has been to wipe them out; but here we find, when the National Board has been wiped out by influences which I will not now speak of, we have it announced to us all over this country, that a cordon has been drawn around and says to the people of Brownsville, you are cut off from communica-

tion, and we will keep you in the presence of contagion and disease until your life is put to the test, whether you can survive this condition. To remove the sick and well from each other, and to take good care of both, and clean the house, is the very gist of sanitation for the safety and preservation of human life. It cannot be the case, I am sure, that any one within my hearing is not as familiar with this mode of treating infectious diseases as I am, when the cases are the common ones that occur at our own homes. What would we say to-day, if a public health officer here in Indianapolis should close the doors of a school-house, in which there were forty-five or fifty children, because a contagious disease had broken out in their midst? Suppose the doors were shut, and a man with a loaded gun put at the entrance, and the parents of those children told they could not be taken away from there; that they must stay there; that they must perish by this dreadful disease, lest some one else should get it. That is the kind of health protection we have as a substitute for the National Board of Health. Mr. President, I have no voice, I have no words, that can possibly express what I feel as an individual at this manner of administering sanitation.

Dr. HUNT, of New Jersey. — Mr. President, I have a letter here from Dr. Henry Hartshorne, of Philadelphia, which relates to the subject under discussion, and I think the present is an appropriate time to read it to the Association. The letter is as follows: —

PHILADELPHIA, 10, 15, 1882.

PROF. R. C. KEDZIE, M.D., *President of American Public Health Association*: —

Dear Doctor, — Being an old, and, at one time, an active, member of the American Public Health Association, I cannot forbear endeavoring to call attention of its members, through its President, to what I believe to be, in one section of our country, a most disastrous error of sanitary practice.

The Board of Health of Pensacola, Florida, have issued an appeal for aid, in which they say that "Hundreds of persons, dependent upon their daily labor, and thrown out of employment by the yellow-fever epidemic, are *prevented from going to seek it elsewhere by a rigid and impassable quarantine*."

Has not the American Public Health Association agreed upon principles which would forbid such an imprisonment within an infected region?

If anything is proved concerning yellow fever these two things are known: first the most certain way of diminishing the number of its victims is for as many as possible of those susceptible to it *to remove from an infected locality to a healthy place*; and, second, with such removals occurring, amounting in all, in various places, to many thousands, *no epidemic of yellow fever has ever been produced by them in a place whose conditions are healthy*.

Will not the American Public Health Association lift up its voice against such an error of practice, which may, *needlessly*, cost many valuable lives?

With much respect,

HENRY HARTSHORNE.

Dr. HUNT, of New Jersey. — Mr. President, I have only to add, after reading this letter, that for myself, as a member of the Executive Committee, I am ashamed that we should have hesitated about reading this

letter before this audience for fear somebody might feel that it was especially in favor of the National Board of Health.

Dr. DEVRON, of Louisiana. — Mr. President and gentlemen of the Association, I feel it my duty to rise, for two reasons: first, because Louisiana has been pointed out as the only State whose Board of Health has shown opposition to the National Board; secondly, because, as the representative of the Sanitary Association of New Orleans, — a body of volunteer citizens, who spend their own money to purify the city of New Orleans, and to protect it from pestilence, and to assist the very Board which denounces the National Board, — I am authorized, as the representative of that body here, to assert, and as its delegate I do assert, that they would see with fear and regret the abolition of the National Board. They would see it with fear and regret, not only as citizens spending their money to prevent shot-gun quarantine, and to carry out the instructions for purification so widely disseminated by the National Board, but as merchants they feel that, without the support of the National quarantine system provided by that Board, commerce would be ruined, and they might as well leave New Orleans and go somewhere else. There never was any interference coming from the State of Louisiana. I wish it to be well understood that neither the State of Louisiana itself, nor its citizens, have ever protested against the National Board. It has been merely a matter of vanity upon the part of the President of the State Board individually; and, were it not for the personal animosity maintained by political influences, it would soon pass away, and there would be nothing of State rights in the matter. Such an assertion of State rights is misleading the public, and should not be tolerated; and, as soon as the truth is properly understood, it will not be tolerated by the citizens of Louisiana. Therefore, as the representative of the Sanitary Association of New Orleans, I assure you that our assistance can be depended upon in obtaining from Congress any measures for the perpetuation of, and, if need be, for the improvement of, the National Board of Health.

Dr. D. A. COLTON, of Illinois. — Mr. President, I do not feel that I shall speak with so much enthusiasm as some who have spoken, although I like to hear these outbursts in regard to a Congress that refused to do what it ought to have done. But of course it is for us to look to success in the future. It strikes me that this National Board of Health must not be let fall, because, — perhaps I am a little foreboding, — in view of the news that we get from the East, it is not unlikely we will have cholera to contend with, perhaps not many months from now; and what would we do without a National Board of Health? Would not this of itself have a great effect upon the representatives in Congress? Would they not, if every individual member of this Association should take it upon himself to do what he could to influence the representatives in each of their respective States to vote as they should with reference to this great object, have a much better understanding upon this subject? Of course it is pleasant to hear epithets applied where they apply so well; but yet that I fear will not gain the point. We must solicit. We must labor

with them kindly, and rather persuasively, and we will accomplish our object. That is the idea. It seems to me that every one must attend individually to this matter. Of course in every place there are certain men who have great weight, who can be influenced by the individual efforts of the members of this Association. Let us all work in this way, and the National Board of Health will be sustained by the next Congress, — especially if we throw cholera in their faces, and tell them they will certainly will go to perdition if they do not sustain the National Board.

Dr. J. Y. CANTWELL (speaking for Alabama, of which he is sometimes a resident). — Mr. President, as the representative of Alabama in the council of this Association, I have only to say that I am well convinced that not only the professional sentiment of Alabama, but the sentiment of the people of the entire State, will bear me out in voting and acting in favor of the resolutions as presented.

Dr. THORNTON, of Tennessee. — Mr. President, I wish to offer my support to these resolutions as submitted by the Executive Committee. As Memphis has been perhaps from the first organization of the National Board its greatest beneficiary, I wish to bear testimony to the fact, not only of its local sanitation, — because Memphis was the point selected to make the sanitary survey first, — but to the invaluable assistance that it has given during the past summer. It was the Memphis Board each summer that led off in calling for the National Board, and the establishment of the quarantine-inspection service on the Mississippi river. The only pity has been that it could not possibly have conducted that service in a manner to have prevented interference with the commerce of the Mississippi valley and of the country during the past three summers. As illustrative of that fact I will state that when the order came announcing that by the 1st of July — or fixing the time, if I am mistaken about the date; the 15th I believe it was — in all probability that service would go out of operation, it was thought advisable in Memphis, after due and proper deliberation, to place an embargo upon certain articles of commerce coming out of New Orleans. While New Orleans was not especially mentioned in the order, yet it was the inference that that was the main point of danger, as it had always been heretofore. Now, there is certainly no wish or desire on the part of either the health authorities of Memphis, or the rest of Memphis, or the mercantile community there, to interfere in the least with the commercial relations of any city south of it; but I state but the fact when I say if this agency is removed there is none that I know of that will take its place; and if the National Board is discontinued the commerce of the Mississippi river will be interfered with, so far as Memphis is concerned, next summer, if the same indications of danger arise. This is just as certain as the summer comes. It may be that we are over-sensitive there; but the fact nevertheless exists that if danger appears, — or it does not matter whether there is real danger or not, — if there is well-grounded reason to believe that danger exists south of it, Memphis will quarantine most unquestionably and most effectually as far as she is able to. Now, sir, it would certainly be very

ungracious in Memphis, or in its representative, to withhold what influence it has in Congress, not only from the restitution of the National Board to its former status, but from any movement to give it increased power, if it needs it. Therefore I can only express my regret at my inability to say more than I do in favor of these resolutions.

Dr. HILLIS, of Iowa. — Mr. President, I have listened to this discussion with a great deal of interest. I rise for the purpose of heartily endorsing the sentiment contained in the resolution from the Executive Committee as well as the feeling in the resolution of Dr. Early; but I do not think the way to reach Congress is by denunciation. I think we can accomplish more by persuasion and reasoning and teaching, where necessary, than by denunciation. The majority of congressmen, doubtless, upon the question of sanitation, are right. We know the majority of our profession are right, and I believe the majority of the people at large are also right upon this question, and are decidedly in favor of maintaining the National Board of Health. The last Congress — I apprehend, a great many of them have axes to grind in the way of wanting to be returned to their seats that they then occupied — found it necessary to do something to enhance or increase their popularity at home. Now, I am not offering this by way of denunciation, for I believe they now feel that they did not properly understand the issue when they voted. There are a great many congressmen who do not understand the great interests involved in this question. I have talked with quite a number myself since the adjournment of Congress, some of whom will go back and be there when this matter comes up again. They acknowledged to me that they had made a mistake, but said it was a thoughtless one; it was not intended to do any wrong to the National Board, or to the great question of sanitation, or to the public interest. They simply did not stop to analyze the question; they did not know how important that National Board was to the great interests of this country, and in that way they voted as they did. If the question is presented to them again, many of them will willingly retrace their steps, as some of the gentlemen in this house can bear me witness. I say I do not think it is prudent to denounce Congress in this wholesale manner. We can imagine, as I have attempted to do, the motives of some of the voters in Congress upon this question, but not all of them. I can speak for my own State. I have seen some of the leading congressmen and senators of my State since Congress adjourned; but four or five days since I had the pleasure of being at a meeting addressed by Senator Allison, who, I believe, was at the head of the committee in the Senate, and he sees the thing differently now from what he did then, and he is willing to do what he can in the way of restitution in the next Congress.

Dr. P. H. BAILACHE, U.S. Marine Hospital Service. — Mr. President, I wish to say a few words in regard to the resolution. I suppose the resolutions are intended to have their weight with Congress, and for that reason they should be carefully drawn, so as not to lead astray. The second resolution, I think it is, claims that there is no other branch of

the public service that is able to attend to this matter. I do not know what matter it refers to especially, but if it refers to the matter of quarantining, as the inference seems to be, I take exception to it. I believe I can state for this Association some facts that may be of value in forming their judgment. The Treasury Department, and under it the Marine Hospital Service, has had charge of quarantine once; and they had no appropriation like the National Board of Health now. In 1878 the National Quarantine Bill was passed by Congress, which, so far as appears, worked quite as well as the one under which the National Board of Health has been operating. That quarantine act was never supplemented by an appropriation. Now, what I wish to say is this, that at every port in the United States there is a medical officer, and in the larger ports several medical officers under the Treasury Department belonging to the service known as the Marine Hospital, Service which has for its duty the care of sick seamen. Naturally thrown with the shipping of those stations are officers who are able, and who, under that law that was repealed by the new law, took charge of quarantine matters, and administered them to the entire satisfaction of the local officers, with probably as much ability as any other set of men. The fact is that some of the officers — at least, one is now a medical officer in this service of the Board of Health at Port Huron; another one, who went to Havana, is now a member of the Marine Hospital Service; and it would not be well to go before Congress and say that there was no other organization able to do that work. We have not only got to make it appear that it is an advantage to health, but that it is to the advantage of Congress. As I understand it, quarantine matters are based upon the authority of Congress to regulate commerce. That lies with the Treasury Department. We naturally look to the Treasury Department to protect commerce as much as possible; and the Treasury Department, therefore, through its medical officers, its revenue marine vessels, which go out to sea and meet these infected vessels, and through its officers in every port, can do this work, and always give general satisfaction to the local authorities. Now, it has been remarked here that the $100,000 appropriated by Congress was being used for murdering people. I think that is a mistake. I suppose the gentleman (Dr. Bell, of New York) refers to the present cordon established, under the Treasury Department, at Brownsville. To understand what that cordon is you must understand that it is located thirty miles out of the city; and, at the time it was placed there, orders were issued for all that were able to come up to that line to stay there ten days, for observation, when permission to pass out was given, if no disease appeared. There is now a quarantine, or cordon, extending from Brownsville to a place called Laredo, three hundred miles up the Rio Grande, as a protection against the infected districts of Mexico, from which you see by the daily papers yellow fever is advancing. These points are, at this moment, protected by the Marine Hospital Service. There is no trouble about managing quarantine, and managing it satisfactory, through the Treasury Department; and if the National Board of Health, of

which, by the way, I am also a member, and thus have some right to judge of the two services in this line, — and, I say, if the National Board of Health has not enough to do to look after the twenty things that were enumerated by the President of the Board, without picking up quarantine, which naturally falls to the department that regulates commerce, then I do not know what more it wants. Now, in regard to the status of the National Board of Health. No legislation has occurred that interferes in the least with its organization, or with its existence. The Constituting Act should not be misunderstood or confounded with the Quarantine Act which was subsequently passed. Now, the Quarantine Act expires by limitation on the second of June next, 1883, and with expiration of that Act the Act of 1878, which is the same in all particulars except one, comes in force. That Act you are not familiar with, simply because it was not promulgated. There was no money to do the work. It includes not only the same work the Board was doing, but also the prevention of the importation and sale of infected cattle; and also provides for the publication of the bulletin, and the obtaining of information from abroad. By the way the *Public Health Bulletin* originated in the brain of the lamented Woodworth. He was the first man that ever published it, and the same work is now being done, and, so far as quarantine is concerned, can be done, under the Treasury Department without conflicting with the local authority (and without bringing in the National Board), with the same approval that the National Board is having, simply because it is the department that manages the commerce of the country; and the Board of Health, by throwing quarantine matters overboard, would have plain and clear sailing.

Dr. THORNTON, of Tennessee. — Mr. President, I want to ask the last speaker if the Marine Hospital Service would maintain the Inspection Service on the Mississippi river?

Dr. BAILHACHE. — Mr. President, I will say, in answer to the Doctor, that, when the trouble occurred with the National Board of Health, request was made of Surgeon-General Hamilton, through his officer stationed at New Orleans, to make such inspection of the river-boats as the owners or masters desired; and he made such inspection. Their certificates were not received, simply because the National Board of Health was supposed to be the right party to issue them, and the matter was not understood.

Col. HADDIN, of Tennessee. — Mr. President, as a representative from the city of Memphis, I shall detain you only a few moments. My reason for making any remarks at all, after Dr. Thornton has made his remark, is this: that if there is a city in the United States that feels its obligation to the National Board of Health, and to this society, it is the city of Memphis. Now, we do not want anything done by Congress, or anything here started to be adopted by Congress, which will not give us the same security that we have received at the hands of the National Board of Health. Now, the Doctor here, who belongs to both services, the National Board and the Marine Hospital Service, believes that the

Marine Hospital Service will answer the same purpose. It becomes the duty of Congress, in its wisdom, to say which shall serve this people; but certainly the people of the United States must be served in this matter of the public health. Now, we have tried the National Board of Health; she has all the paraphernalia of the work, — boats, and everything of that kind, up and down the Mississippi river, — and we have faith, and feel perfectly secure in her hands. For the people of Memphis, and for the people of the States of Arkansas, Tennessee, and Mississippi, which I can represent, I say we want the National Board continued. You know, my friends, Memphis is the trading-point for those three great States. What affects one of these three great States affects the others from centre to circumference. I do not know whether the other two States have a representative here to-night or not; I do not believe they have, — yes, Alabama is represented; she throws her commerce into our coffers, and her representative has come forward boldly and stated that she desires the National Board continued. Now, my friends, if the National Board never did anything for any other community in the world, than for that little city of fifty thousand inhabitants, — Memphis, — she has more than paid the cost of the entire organization. What has it done? What has the society done for us? I will tell you, my friends. You all know where we were, and how we were situated in 1878. I knew, too; but I was not there, but your funds came there to assist our city to bury its dead, — when we laid away about seven thousand of our people in Elmwood Cemetery. I do not want that to occur again during the next four years. I preside over that people, and cannot run. I have never stood an epidemic there yet, and I don't want to have to stand one; and, therefore, I am for the National Board of Health. Now, gentlemen, in all seriousness, when Congress meets again, and looks over the field of the whole United States, and sees the small-pox, cholera, diphtheria, and all the contagious diseases, coming upon us, if it thinks the Marine Hospital Service can serve us better than the Board of Health, we must accept it; but I don't think they can come to that conclusion.

Dr. BAILHACHE. — Mr. President, the gentleman has misapprehended my remarks. We do not propose for the Marine Hospital Service to do anything but manage national quarantine, if the country *wants* a national quarantine.

Col. HADDIN. — Well, Mr. President, we want quarantine. I say to you that nothing will suit the people of the Mississippi valley until the time comes when every ship shall be quarantined outside of the mouth of the Mississippi river. There is where we need to quarantine. How is it now? The ship comes up there. How large a place does it come to? To a place that has eight thousand or ten thousand inhabitants on each side of the river. These people have daily contact with these ships. Then these people have daily access into the city of New Orleans. How can you keep fever out under such circumstances? The place to quarantine ought to be outside of the Mississippi river, as it is at Charleston, and as it is at other places. I am very glad there is a representative of

the city of New Orleans here (Dr. Devron). He says that Louisiana will come up about this thing. Yes, she will come, because we above her will make her do it. We stand on the bluff, and whenever they let the fever into that city we intend to close that river. That is what we propose to do. They can fully understand it. We are backed by the great North-west. What do they tell us at Cairo? Whenever you are ready say the word, and we will back you. (We came very nearly saying it this year.) What did Wirt Johnson say? He said, "If you have three cases of yellow fever in there I will close all the railroads running into Mississippi." Now, we do not want this kind of shot-gun quarantine. That is what we are fighting. It is what we are fighting against; but the only way to prevent it is for the strong arm of this great government to come in and take charge of this matter. How is it with us? A boat went down to New Orleans and started back up the Mississippi river. She was inspected, went through, and got a certificate from the National Board of Health, — some of them I have seen signed by Dr. Sullivan, — and came along up by Vicksburg. That was all right. Up by President's Island. That was all right. At the time she got to Memphis there was a policeman took the vessel in charge, and if there was anything irregular about it the captain was arrested. One captain went down to New Orleans, got one of those certificates signed by the Marine Hospital Service, and started back up the river. The certificate was all right, and I have no doubt his ship was all right; but it did not stand worth a cent in the Police Court of Memphis. I am a sort of judge of that court, you know. That man was brought up, and his little boat tied away up at that little island above town. He pulled out this certificate of the Marine Hospital Service from his pocket, and I looked at it, and looked at my friend Thornton there. He tells me what to do. He is President of our Board of Health. I looked at my friend Thornton, and he says, "Give it to him." I fined the man fifty dollars, and it had a fine effect. You cannot get a boat to come to Memphis now unless it has got a National Board of Health certificate. You all know that the commerce of this country is carried on by confidence. On that mighty river, whenever a steamer there bears the certificate of the National Board of Health, we feel that it is all right. Dr. Bell went down and inspected one, a long time ago, and they have been keeping up his inspections ever since. That is all we want. Let Congress do something that the commerce of the country will not be impeded. What would be the effect of stopping the Mississippi river for one day? The loss of millions of dollars to this North-west! I do not know whether we can do this thing legally or not. I do not say anything about that. The thing is that we do it; and that is all there is of it. We have had the fever. I didn't have it; but that is no matter, — we know what it is. It cost millions upon millions of dollars, and I tell you now, whether the National Board withdraws its protection, or not, and whether Congress withdraws its protection or not, Memphis intends to protect itself.

Dr. HUNT, of New Jersey. — Mr. President, I desire to call the atten-

tion of Dr. Bailhache, of the Marine Hospital Service, to the reading of this resolution. If I understand him correctly, the part of the resolution complained of, or which he is in doubt about, is as follows: "That there is a work to be done by such a Board which cannot be done by any local or State Board, and which is not and cannot be adequately represented or fulfilled by any other branch of the national service." It is very guarded in its expressions. It does not single out the work of quarantining. It is specific, in order not to single out the work of quarantining. It then goes on and defines what is meant by the work to be done. Now, if the Marine Hospital Service can do all the work which is specified in this resolution, very well; but we do not so understand it. The resolution continues: "As illustrated in its inspections and inquiries into special conditions so serious as to be national rather than local; in its dealings with yellow fever and small-pox; in its plans for consular health bills from foreign ports and refuge stations for a wide coast range; in its internal care over river and railroad transportation; in its investigations into malaria and other wide-spread causes of disease; in its valuable scientific and practical inquiries into the causes and courses of epidemics; in its comparisons of statistical facts, and its wide-spread distribution of information most intimately affecting the vital conditions of our whole population." Gentlemen will see that the resolutions go on and specify one thing after another, and merely give the idea that this work belongs altogether; that it is a sanitary unit; that it cannot well be separated, and, as such, that the work should be committed to the National Board. There are one or two points already raised by the remarks Colonel Haddin has made. One is this thing of confidence. It is an old saying, that we do not like to change horses when crossing a stream. It is not that we want confidence in some other Board; but it is because this Board is established and has the confidence of the people, and has proved itself entitled to their confidence. I have been somewhat steady in attending to these meetings, and when I see gentlemen from all along the Mississippi valley, from Iowa down to the Gulf, speaking in the very highest terms; when only two or three days ago a gentleman from South Carolina said to me, "Do not let us give up these refuge stations,—they are our salvation;" and when I know that these gentlemen know and testify from experience; they give us, not their theories, not their hypotheses, but just their deep, heartfelt experience. They know what yellow fever is, and what cholera is; and when we come to see what small-pox is, and what we have in this very paper in regard to these certificates coming in, we may well ask, can the Marine Hospital take care of all this? Now, we have ships reaching our shores in seven days from foreign ports, and we must guard against pestilence, which we once had no reason to fear, because it took so long for vessels to come here. Now they come so rapidly that the dangers are many times increased. If all these duties can be attended to by one man, at the head of one service, let Congress give him the power, and make it the duty of that service to attend to them; but if, on the other hand, Congress thinks it can be done better by a representative Board of the

whole country, which will unite and secure the best efforts of the entire health interest throughout this great nation, let Congress continue to make suitable provision for the present National Board of Health. We have confidence in that Board. We want the matter left with that Board; but we do not ask that that question be decided here, in the vote upon these resolutions. We do ask, however, that we recognize what has been done by this Board, and that we declare, as the sense of this Association, that we know of no good and sufficient reasons why there should be a change. Now, I am not so discouraged as some of us are. I believe in the majesty and success of eternal right; but I do not believe that right meets with no rebuffs. I believe that great measures for a nation are of slow development; and great health measures, as others, get their strength as governments and men do, by contests, by discussions, and by occasional disappointments and defeats. These bring out the strength of nations, the strength of a cause, or the strength of a man. Therefore I quite agree with the gentlemen who spoke in regard to the methods which we are hereafter to use. We must give the facts in evidence. We must present them to the men who represent us in Congress. I do not believe that the Congress of the United States means to be untrue to the great interests which have to do with the national health. I do not even feel, like denouncing them as they have been denounced here this evening.

If the American Congress, after calm, cool deliberation, decides that there is need that a part of this service be given over to another department, they will give the necessary power and the necessary money to that department; but if the National Board of Health can inspire the confidence that they have already done, I am not disturbed by the probability of any such result. But only let us stand here where we are, and, knowing what this Board has done, let us go on until Congress gives them, or somebody else, sufficient power and means to enable us to meet these pestilences, and not only to meet them, but to prevent greater evils, which are constantly threatening our American people.

Dr. Hillary Ryan, of Texas. — Mr. President, I am as much, if not more, interested in this matter, I think, than any other person. I wish to state in regard to the remarks of my neighbor here, Dr. Devron, that he has stated the facts truthfully in regard to New Orleans. There are only one or two persons there antagonistic to the National Board of Health. If these people knew what New Orleans has done in a sanitary way, — that she has literally raised a fund from the widow's mite to the millionnaire's thousands to put that city in good condition, — they would know that her citizens were anxious to do all they could to promote sanitary science. I feel deeply in regard to this matter of shot-gun quarantine. The first that ever I heard of it in modern times was near Memphis. A poor woman with her baby in her arms was trying to get away from the fever. The sentinel told her to go back, and she said if she went back she and her baby would die. But she was compelled to go back by that sentinel; she returned and died. I learned afterwards that this sentinel had been an ignorant slave, and that satisfied me. Four or five years ago there was a

fever at Galveston, and Houston, their neighboring city, shut them out. Senator Homan, of our place, who had been United States District Attorney for that district, happened to be in Galveston. He is an energetic man, and he went to the postmaster, and says, "If you will give me the United States mail, I will break this quarantine." He took the mail, and boarded the train and went to the Harris county line, which is the county which Houston is in, and he found logs laid upon the track. He got off, and the passengers got off, and they laid the logs aside. They threatened to shoot them if they did it, but he told the threatening parties to shoot. They went ahead, removed the logs, and went into Houston. There they were all arrested. Dr. Rutherford was the gentleman who managed the matter against Senator Homan. Senator Homan immediately sued out a writ of *habeas corpus*. They wanted to put it off. He said he would see whether they had authority to stop the United States mail. Of course the judge turned him loose. Now, the National Board of Health is guilty of no such shot-gun quarantine or cordon. I think Dr. Bell will tell you that the city of Brownsville is surrounded by a *Cordon Sanitaire*. Now most of the citizens there are poor Mexicans, I will admit, and largely women, with a whole lot of children. They are kindly told by the Marine Hospital Service to go out thirty miles, and stay there. How is a poor woman without one piece of bread to go thirty miles and drag her little children along? I know about the matter, and I know the facts. Why, sir, your Marine Hospital Service would not permit its surgeons to go to the relief of anybody but those that were in the hospital. There were about twenty in the hospital, and about two hundred out of it, poor people around the town, sick, who needed attention. Poor people under such circumstances find it very hard to procure a buggy, or wagon, or other conveyance; and they did not have the provisions to wait after they had gone the thirty miles. But they were kept there. There was nothing for them to eat after they had gone the thirty miles. If that is the humanity, if that is the way the Marine Hospital Service is to treat my people, I want the National Board of Health.

Dr. T. G. Simons, of South Carolina. — Mr. President, I have been in a position to witness the horrors of the epidemic in Memphis, and also those of the shot-gun quarantine. I can bear testimony to the efficiency of the National Board of Health in regard to Memphis; but I come closer home. I speak now of the South Atlantic coast, the cities of Charleston and Savannah. All the other ports of South Carolina, and three of Georgia, have adopted the rules and regulations of the National Board of Health. Our quarantine regulations all had been in a chaotic state of confusion before. Now they are in order. We want the refuge stations established all the way up along the coast, in our harbors, where infected vessels may be stopped and examined. There must be a point from whence all smuggling intercourse can be prevented. Without such stations the noise of the surf breaking against the shore at night will allow any number of boats to pass in and out unobserved, and there is no sure protection for our people. We do the best we can. We keep our ports

and cities clean, and we have not suffered for a number of years, and I hope and trust in God that we will not for many years to come; but having Sapelo is our salvation. We must have a remote station where infected vessels can be stopped. Sapelo has a broad, open harbor, where a vessel can go in and lay all night, and vessels go there and are treated by medical officers, the sick separated from the well and treated with every kindness and humanity, and the vessel can resume her course in a short space of time. With us this station is an imperative necessity. We must have it. We could not get on without it. All our quarantine laws are based upon that as the outpost picket to prevent the pestilence from being brought to our shores. At one time it was thought yellow fever confined its ravages to the sea-coast; but large experience has taught us differently, and I hope the National Board of Health will be assisted. Every member of this Association, I know, will feel it an obligation to impress upon those who represent their States in Congress the efficiency of, and the importance of, continuing the National Board.

Dr. WIGHT, of Michigan. — Mr. President, I rise to make a motion for the adoption of the resolutions as presented by the Secretary of this Association as coming from the Executive Committee. I was pregnant with a little speech on the subject; but others have said nearly everything that I wanted to say, and I will not repeat it now at this late hour. There is one thing certain, that the sanitarians of this country — those who know best, and whose judgment is worth having in the matter — approve of the work of the National Board of Health. There is another thing certain, that those who have attacked on the floor of Congress the National Board of Health know nothing of their work, and understand nothing of its aids. Whether such ignorance should be rebuked in the sharp, denunciatory terms that have been employed here to-night, or not, I leave for others to say and judge. My feelings are strong enough to add even to that denunciation. I say it is a crime in any man, whether he is on the floor of Congress or elsewhere, to strike at a great national agency of beneficence of this kind, when he knows nothing about the subject; and it is a greater crime in a man who has the intelligence and position to become a member of Congress than the same thing coming from an ignorant man in the community at large. This Board, gentlemen, has done work, not only of national importance, but it has helped give us character as a nation abroad among the scientific men of the world. Taking into consideration the brief period already spent by it in its work, its papers and its investigations show that they have done a work equal to that done by the National Board of Great Britain in the same length of time. These papers that have been issued from the National Board of Health, embodying their important investigations, compare well with the papers that have been issued from the privy council of Great Britain, with a much longer experience in such matters than we have had, — investigations into the great causes of disease, epidemic diseases, malarial diseases, and diseases that attack cattle and other stock, and thus affect the property as well as the lives and health of the

people of this country; these investigations are of vast importance, of national importance. Why, gentlemen, to cut a long story short, — for I am going to shut myself off now as I begin to feel like making a speech, — to cut a long story short, three hundred thousand individuals in this nation are dying every year with preventable diseases; three hundred thousand die that need not die, if we, as a people, were living up to the laws of sanitation. This Board is in the right direction. It has been investigating these causes, and doing its work in a direction to cause an abatement, — slow, it may be, but sure, — a certain abatement of this great surplusage of death; and yet members of Congress, forgetting the green graves of Memphis; forgetting this vast graveyard result of the ignorance of the principles of sanitation in the American people; forgetting thousands of things that they should know, — appropriate twenty millions for the improvement of Goose Creek and other creeks, and yet refuse a pittance for the enormous and imperative work of this Board! Mr. President, I fear I shall become more denunciatory than the denunciation which I deprecated in the beginning if I keep on, for I am beginning to feel strongly about it; so I will stop, hoping that no voice in this representative body of men, — representing the sanitary knowledge and sanitary heart and purpose of this nation, — that no voice here to-night will be raised against these resolutions.

Rev. D. C. Jacokes, M.D., of Michigan. — Mr. President, I have no speech to make. I simply rise to say that the State of Michigan stands by the National Board of Health. We do not know the Marine Hospital Service, but we do know the National Board of Health.

Dr. D. H. Dungan, of Arkansas. — Mr. President, I rise to correct a false impression under which my friend was laboring when he said that there was no representative here from the State of Arkansas. There is. It is useless for me to say anything further than has been said this evening. Everything has been said; but I would add that four years' experience with the National Board of Health has served to give the people of Arkansas great confidence in that Board, and we hope that it will be continued.

The Secretary. — Mr. President, I have an announcement to make in view of the fact that the last resolution calls for the printing of the paper entitled "The Work of the National Board of Health," together with the resolutions and other papers relating to the subject. It has occurred to several that the expense of doing this, in view of our limited funds, would be large; and, for fear that consideration might influence some member to vote against the resolutions, I am very glad to be able to say that a generous offer has just been made by which the entire expense of this printing will be defrayed without calling upon the Treasurer of the Association.

The President. — The question is upon the adoption of the resolutions.

The resolutions were unanimously adopted.

On motion, the Association adjourned until to-morrow, Thursday, Oct. 19, 1882, at 10 o'clock A.M.

THIRD DAY.

THURSDAY, October 19, 1882.

MORNING SESSION. — 10 *O'CLOCK.*

The PRESIDENT. — The Association will come to order. The exercises of the day will commence with prayer by Rev. Dr. D. C. Jacokes, of Michigan.

Prayer was offer by Dr. Jacokes.

The SECRETARY. — Mr. President, there are no announcements this morning from the Local Committee. I am desired by the Executive Committee, to whom were referred the resolutions offered last evening by Dr. Early, of Kentucky, to report to the Association their recommendation, that in view of the fact that the resolutions adopted last evening by the Association very fully cover the ground embraced in Dr. Early's, and are in accord with those offered by that gentleman, the resolutions referred to the committee be passed over without action.

The PRESIDENT. — What is the pleasure of the Association on the report of the Executive Committee?

Dr. HUNT, of New Jersey. — Mr. President, I move that the report be accepted, and the resolutions passed over as recommended.

The motion was agreed to.

The SECRETARY. — Mr. President, I am directed by the Executive Committee to report favorably to the Association the following resolution presented to it by Dr. T. S. Verdi, of the District of Columbia, as follows: —

Resolved, That the Executive Committee, in view of the change in the constitution regarding the classification of members, add to the present blank for applications the following clause, to be filled by the indorsers, namely: "State the business or profession of the applicant, and in what manner he has shown his interest in sanitary studies and allied sciences, and in the practical application of the same."

Dr. HUNT, of New Jersey. — Mr. President, I desire to amend that by adding these words, "with two names attached." Although such has been the custom it is not so by any by-law or our constitution. I, therefore, make the motion to amend by inserting the words, "with the names of two members of the Association attached."

Dr. GIHON, U.S.N. — Mr. President, I would suggest two active members.

Dr. HUNT, of New Jersey. — That is my idea, Mr. President, — two active members.

The amendment to the resolution was agreed to, and the resolution as amended was adopted.

The SECRETARY. — Mr. President, it will be remembered by the older members of the Association that at the meeting held at Savannah last

year, on the recommendation of the Executive Committee, the Secretary was made, *ex-officio*, Secretary of the Advisory Council, and a member thereof. I may state briefly that the reason for this action, which was endorsed by the Association, and made its rule, grew out of the fact that the then President, the late Dr. White, of New Orleans, was obliged by his condition of health to lean very much upon the Secretary for aid and support; and, also, the fact existed that the records of the Advisory Council had previously become somewhat involved in their arrangement, and on that account it was also deemed a good thing to do. There are reasons, however, which have perhaps suggested themselves to the members of the Association why it is better that the Secretary of the Association should not be the Secretary of the Advisory Council, which is its advisory body purely, and ought, therefore, to be kept as free from all connection and alliance with the Executive Committee as possible. I have, therefore, myself recommended to the Executive Committee that the vote whereby the Secretary of the Association was made secretary of, and a member of, the Advisory Council, should be rescinded; and I am directed by the Executive Committee to report favorably the motion rescinding that vote of the Association.

The PRESIDENT. — You have heard the recommendation of the Executive Committee; what is the pleasure of the Association in the matter?

On motion, the recommendation of the Executive Committee was concurred in, and the former vote of the Association rescinded.

Dr. GIHON, U.S.N. — Mr. President and gentlemen, I desire to offer this resolution, and ask its reference to the Executive Committee: —

Resolved, That the Advisory Council be instructed to consider, with as little delay as possible, the feasibility of an International Sanitary Exhibition, to be held in the city of Washington, or such other city as may be thought better, and to prepare a scheme for the organization of such an exhibition, and to report the details of such plan, if determined upon, at the next meeting of the American Public Health Association.

The PRESIDENT. — If there is no objection, the resolution will take the usual course and go to the Executive Committee. The Chair hears none, and it is so ordered.

Dr. DEVRON, of Louisiana. — Mr. President, I would like to know the reason why the volume of last year's transactions did not reach the members of the Association for so long?

The PRESIDENT. — This is out of order at the present moment. The transaction of the morning business must first be gone through with in the opinion of the Chair.

The SECRETARY. — Mr. President, I am directed by the Executive Committee to announce that, on account of ample information received since the election of Dr. Beebe to associate membership, as to his active participation in sanitary work, — one feature being his very earnest endeavors and labors in behalf of the creation of the State Board of Health of his State, — he has been transferred to the list of active mem-

bers of the Association. I am also directed by the Executive Committee to announce the following gentlemen as candidates for election, respectively to active and associate membership, as recommended by the committee. (See list at close of volume.)

Dr. WIGHT, of Wisconsin. — Mr. President, I move that the Secretary be instructed to cast the ballot of the Association for the election of the several gentlemen named to the class designated.

The motion was agreed to.

The SECRETARY. — Mr. President, I hold in my hand a ballot bearing the names of the gentlemen recommended respectively for active and associate membership by the Executive Committee, and I cast the same for their election to membership as recommended.

The SECRETARY. — Mr. President, I am requested to state by the Executive Committee that they have received a communication from Dr. J. H. Letcher, of Kentucky, chairman of the Committee on Compulsory Vaccination, stating his ill-health, and his great regret that thereby he has been unable to attend at all to the duties of his committee for the year, and asking, in consequence of his continued ill-health, to be discharged from the committee, that his place may be filled, and that the committee be granted further time to report.

Dr. EARLY, of Kentucky. — Mr. President, I move that Dr. Letcher be relieved, at his own request, from the committee, and that some one else be appointed in his place, and that the time of the committee to report be extended.

The motion was agreed to.

Dr. HUNT, of New Jersey. — Mr. President, I move that Dr. Eugene Foster, of Georgia, and Dr. Samuel W. Abbott, of Massachusetts, be added to that committee.

Dr. BELL, of New York. — Mr. President, if that committee is subject to further enlargement, I would like to nominate Dr. Beckwith, of Ohio, a gentleman who has paid a great deal of attention to the subject.

The SECRETARY. — I would state, Mr. President, that that would make the committee consist of an even number, which is contrary to the custom.

The PRESIDENT. — The question is on Dr. Hunt's motion. If there is no objection it will be taken by consent, and the names of Dr. Foster and Dr. Abbott added to the Committee on Compulsory Vaccination. Is there objection? The Chair hears none, and it is so ordered.

The SECRETARY. — Mr. President, I have two communications before me: one is from Dr. Henry D. Holton, of Vermont, saying, "God speed your work; sickness prevents me from attending"; and the other is a letter from Dr. A. B. Tadlock, of Tennessee, stating that he is detained at home, but that he wishes us eminent success.

The PRESIDENT. — According to the rules of the Association, the Advisory Council, acting as a nominating committee, is required to report its nominations during the Thursday forenoon of each session. The Association is now ready to hear the report of the committee.

The SECRETARY. — Mr. President, I have the following report to submit from the Advisory Council, acting as a nominating committee: —

Mr. President, — The Advisory Council, in its capacity of nominating committee of the Association, directs me to report to this body that it has duly convened for the discharge of the special duty placed upon it, and to transmit the following nominations as its report: —

For President.

Dr. EZRA M. HUNT, of New Jersey.

For 1st Vice-President.

Dr. ALBERT L. GIHON, U.S.N.

For 2d Vice-President.

Dr. JAS. E. REEVES, of West Virginia.

For Treasurer.

Dr. J. BERRIEN LINDSLEY, of Tennessee.

For Executive Committee.

Dr. THOS. L. NEAL, of Ohio.
Dr. J. S. BILLINGS, U.S. Army.
Dr. H. D. FRASER, of South Carolina.
Dr. T. J. TURNER, U.S. Navy.
Dr. J. J. SPEED, of Kentucky.
Dr. J. D. GATCH, of Indianapolis.

For the Council,

AZEL AMES, JR., *Secretary ex-officio.*

(*Subsequently amended.*)

The PRESIDENT. — What action will the Association take on the report of the Advisory Council?

Dr. WIGHT, of Michigan. — Mr. President, I move that the Secretary be instructed to cast the ballot of the Association for the nominees reported by the Advisory Council.

The motion was agreed to.

The SECRETARY. — Mr. President, I hold in my hand a ballot bearing the names of the gentlemen who have been nominated to fill the several offices for the ensuing year, which I cast for their election to the respective offices for which for which they have been named.

The PRESIDENT. — The nominees are elected.

The SECRETARY. — I am also directed, Mr. President, by the Advisory Council, acting in its ordinary capacity, to submit the following report: —

INDIANAPOLIS, 1883.

Mr. President, — I am directed by the Advisory Council of the Association to report that it has received and considered invitations from several cities for the holding of the next meeting of the Association, and recommends to the Association that the eleventh annual session be held in the city of Detroit, Mich.

For the Council,

AZEL AMES, JR., *Secretary ex-officio.*

Dr. GIHON, U.S.N. — Mr. President, I move that the report be received and adopted, and Detroit, Michigan, fixed as the place for holding the next annual meeting of this Association.

The motion was agreed to.

The PRESIDENT. — To complete the officers of the Association, it is the duty of the President to announce the Advisory Council, which I do, as follows: —

Alabama	Dr. R. D. WEBB, Livingstone.
Arkansas	Dr. D. H. DUNGAN, Little Rock.
California . . .	Dr. F. W. HATCH, Sacramento.
Colorado	Dr. CHAS. AMBROOK, Boulder.
Connecticut . . .	Dr. C. W. CHAMBERLAIN, Hartford.
Delaware	Dr. L. P. BUSH, Wilmington.
Florida	Dr. R. B. S. HARGIS, Pensacola.
Georgia	Dr. W. H. ELLIOTT, Savannah.
Illinois	Dr. H. A. JOHNSON, Chicago.
Indiana	Dr. J. W. COMPTON, Evansville.
Iowa	Dr. W. S. ROBERTSON, Muscatine.
Kentucky	Dr. WM. BAILEY, Louisville.
Louisiana . . .	Dr. S. S. HERRICK, New Orleans.
Maine	Dr. J. T. GILMAN, Portland.
Maryland . . .	Dr. GEO. H. ROHE, Baltimore.
Massachusetts . .	Dr. H. P. WALCOTT, Cambridge.
Michigan	Dr. H. B. BAKER, Lansing.
Minnesota . . .	Dr. D. W. HAND, St. Paul.
Mississippi . . .	Dr. WIRT JOHNSTON, Jackson.
Missouri	Dr. W. B. CONERY, St. Louis.
New Hampshire .	Dr. IRVING A. WATSON, Concord.
New Jersey . . .	Dr. D. C. ENGLISH, New Brunswick.
New York . . .	Dr. J. H. RAYMOND, Brooklyn.
North Carolina . .	Dr. T. F. WOOD, Wilmington.
Ohio	Dr. G. C. ASHMUN, Cleveland.
Pennsylvania . .	Dr. WM. SNIVELY, Pittsburg.
Rhode Island . .	Dr. E. M. SNOW, Providence.
South Carolina . .	Dr. T. G. SIMONS, Charleston.
Tennessee . . .	Col. D. P. HADDIN, Memphis.
Texas	Dr. HILLARY RYAN, Caldwell.
Virginia	Dr. J. L. CABELL, Charlotteville.
Vermont	Dr. H. D. HORTON, Brattleboro'.
West Virginia . .	Dr. G. R. MOFFETT, Parkersburg.
Wisconsin . . .	Dr. J. T. REEVE, Appleton.
District Columbia .	Dr. J. M. TONER, Washington.
U.S.A.	D. G. M. STERNBERG, San Francisco, Cal.
U.S.M.H.S. . .	Dr. H. W. AUSTIN, New Orleans.
U.S.N.	Dr. ADRIAN HUDSON, Washington, D.C.
Com. of Education,	Hon. JOHN EATON, Washington, D.C.

The Chair will also beg leave, at this stage in the proceedings, to announce the committee of five, ordered yesterday, on the National Museum of Hygiene, as follows: —

Dr. Henry P. Walcott, Cambridge, Mass.
Dr. Edw. G. Janeway, New York City.
Dr. George Homan, St. Louis, Mo.
Dr. L. F. Salomon, New Orleans, La.
Dr. H. D. Fraser, Charleston, S.C.

The Secretary. — Mr. President, I am desired by the Executive Committee to announce as the Publishing Committee for the ensuing year, Dr. S. H. Durgin, of Massachusetts, Dr. Henry P. Walcott, of Massachusetts, and the Secretary.

The President. — The routine business of the morning hour is now closed. The next business in order is the report of the Committee on Venereal Diseases, by Dr. A. L. Gihon, Chairman.

Dr. Gihon submitted his report. (See Reports of Committees.)

DISCUSSION.

Dr. Gihon, U.S.N. — Mr. President, the report I have just submitted is signed by every member of the committee except Dr. Wines, who is present, and presents his views in a minority report. It is very well known that for the last seven years I have been laboring as an individual in this vineyard, and this act which we propose is the fruit of consultation with some twenty or thirty distinguished lawyers, and among others judges of the superior courts. On the authority of these lawyers we present it as good law; it is not our own work; it has been framed according to the legal requirements by competent parties; and I assure you that there is no ulterior design in the act. There is nothing looking in the direction of any license system; there is no attempt to do anything except to devise some means of punishment for the man or woman who diseases an innocent person, particularly the man. Those of you who have daughters, cannot you understand this fact, that among one hundred young men who surround your daughter there are ten syphilitics, and that in every twenty-five persons in this country there is one syphilitic? I only want to supplement what I have stated in my report by showing you a few photographs of innocent children who are the offspring of syphilitic husbands and fathers. I will ask you to return them to me after you have looked at them.

The President. — We will now hear the minority report of Rev. Mr. Wines.

Mr. Wines submitted the minority report. (See Reports of Committees.)

DISCUSSION.

Rev. Frederick H. Wines, of Illinois. — Mr. President, I will only add in reply to a remark of the chairman of the committee that there is no intention to interject into this law anything looking toward the licens-

ing of prostitution, that I fully believe it; but I believe that without intending it the law does look to that end, and that the power conferred upon the local Board of Health under that act is a power to register prostitutes, which is equivalent to conferring upon them the power to license prostitution; and for that reason I cannot support the report of the majority of the committee.

The PRESIDENT. — I will say before the commencement of the discussion that the rule adopted yesterday limiting speeches to ten minutes, and not permitting members to speak twice on the same subject so long as any other member desires to be heard, will be strictly enforced.

Dr. GIHON. — Mr. President, I answer, "Yes, sir," categorically, to the five questions propounded by Mr. Wines in his minority report. In the first place he asks, or suggests, whether this law will not foster licentiousness, and develop an antagonism to marriage; if it will not encourage licentiousness, or foster licentiousness, and make marriage undesirable? Gentlemen, is not marriage undesirable between a diseased man and a poor, innocent girl? Had not she better remain unmarried? It is only in the interest of those persons — your own daughters — that we want to make marriage of that sort undesirable. This law proposes to punish that man as a criminal who presumes to wed a girl, knowing that he has that disease. Secondly, Mr. Wines asks if the diseased man must be secluded. I have answered that in a former report, and there are a few copies of it left which any gentleman may have who cares to read it. It makes it the duty of the attending physician to explain to the patient that he is a leper; to make him his own jailer; to say to him there are certain bounds which you cannot transcend under penalty of the law. If you violate these self-imposed bounds my obligation to you as a physician ceases, and you are to me a convicted criminal; and then to expose that man. Then it is your duty and my duty to expose that man; and I know to-day, if there was a law like this, there is a number whom I should not hesitate to expose. I know a young man who three years ago I rejected for syphilis, who has within three weeks married a pure, innocent girl! Ought not that man to be denounced before all the world? Why should the physician be the man to shield him from public indignation? Third, as to the question of registration. I assure the Association that registration is not desired; it is not desirable. I do not believe that registering public women in any city is going to tend to the salvation or the safety of these innocent women and children. It is only a part of what we have to trust to the local Boards of Health. You have to trust your health officers. You trust them to isolate cases of small-pox; why not trust them to isolate cases of venereal disease. It is not supposed that they are going around making a list of public houses; but when it comes to their knowledge that small-pox is in a certain house it is their duty to investigate that locality. The third question suggests that the threatened imprisonment will not deter any one. It will not deter the libertine, but it will deter husbands from defiling their wives; and it is the wives that we are seeking to protect. We are not seeking to protect any libertine; but we are

putting it in the power of the law to punish any man who, having disease, shall deliberately go and contaminate his wife and children. That is all, I think, I need to say on the subject.

Dr. BELL, of New York. — Mr. President, during the reading of the minority report I made a few notes in consequence of some points taken, but most of them have been so effectually answered by Dr. Gihon, that I almost shrink from having a word to say, and should not, but for this repetition, as it were, of the social attitude of the questions involved in the report of the committee in regard to marriage; that is to say, assuming that the law recommended by the majority report were passed, whether it would be likely to encourage or discourage marriage. If I understand the logic of the minority report to-day, it purports to be the same as that two years ago in New Orleans; that is to say, the encouragement of these vices. I think it was referred to two years ago, when the author of the minority report stated, according to the statistics, the lessening of the number of marriages, and that in proportion to the extent and propagation of syphilitic diseases marriages would be less numerous, until eventually the social status would be the unmarried state and the encouragement of impure diseases. I can see no other issue when applied to the social status of the people, though he has assured us that it is from no moral stand-point that he views it. The other special point that Dr. Gihon did not allude to is the apparent fear of the author of the minority report to trust the application of measures to the health authorities, which is in effect to say they should be trusted to no authorities whatever. We are here trying to represent the interests of health throughout the country, trying to multiply the number of administrative boards and State authorities to prevent disease, and the health authorities are created for that purpose. The more malignant, the more dangerous, the more prevalent the disease so much greater the necessity that it should be conquered, and somebody must have the management and control to prevent it, if it be possible. The health authorities are the chosen agents for this purpose. If not the health officers, then, I ask, who should have charge of preventing this disease? It is true health measures sometimes are offensive; but that is because the people are not educated up to the advanced notions of sanitarians; but we must do the best we can. The heroic treatment alluded to I appreciate when it is applied to yellow fever, although I cannot help denouncing the treatment which is now in vogue — the so-called heroic treatment — to prevent yellow fever. Not so at all. No sanitarian regards the present course as heroic treatment to prevent yellow fever. It is that kind of heroic treatment which says, "I will leave my family in the house to be burned up if I individually can get out." It would be heroic treatment in the prevention of this disease for a man to button up his coat and say, "I at least will not risk any children; I will not marry." It would be heroic treatment for this disease, if all over the country every pure virgin should say, "I will not marry, lest I should bring children afflicted with this disease into the world." That is the status; that each one should wrap himself

or herself in the cloak of their own purity and say, "I will take care of my vessel." It is certainly unnecessary to repeat any other language, for I do not believe I can use any more pointed language as to the necessity of trusting some one to prevent the spread of this disease. Another fear is, that the health officers would eventually come to the necessity of registration. Is that the practice of health officers? Is that the practice of the most enlightened health administration that we have, that it is necessary to register individuals lest they should be exposed? Are they disposed to retry forms of law which have failed, as in St. Louis and other places? Are they going back to try that over again? As soon expect the heroic treatment of yellow fever, to which the gentlemen have alluded, which prevailed two centuries ago, and which no sanitarians now advocate, to be tried again. I have no fear of health officers trying old means and measures which have been proved failures. That is not their way. It is only the way of those who, for the first time, get into possession of a little power, and they strike here and there in a disastrous manner, and they do a great deal more harm than good. That is not the way our health boards and health authorities are now constituted under the guidance of the State Boards of Health. We had that kind of miscellaneous — that miscellaneous kind of action when boards of health were constituted by one man, who rose up and took his gun in his hands and said, "I will stop a train of cars if it attempts to pass a certain point." I do not think there is anything to fear in that respect now.

Dr. HUNT, of New Jersey. — Mr. President, I do not desire to make any prolonged speech upon this report. I have, first of all, to compliment this committee as a model committee. They have not asked from year to year to be continued without reporting. They have reported year after year, and I for one have received a great deal of information and instruction from these reports, and I consider the report we have at this time as one of singular merit; and I have great respect for the minority report in very many particulars that I do not need to enlarge upon. There are two or three matters in the report to which I shall especially call attention. There is the very proper admission, the very frank admission, that there are no reliable statistics upon this subject from civil life, and, that being the fact, no generalization as to the number of those affected in this country, or classification from the vital statistics, can be accurately made. There is also the alarming statement that one-seventh of the army and navy are affected with this disease, illustrating the fact that impediments to the marriage relation and its function are the grand occasion of venereal disease, and indicating that the great protector from, and arrester of, venereal and syphilitic progress is the institution of marriage. There are three or four other points to which I wish to call attention without enlarging upon them; one is, that in such a report great power is obtained by the use of the words "contagious and infectious," with regard to diseases that are not contagious and infectious in the general sense, but which are communicable, and which are contagious and infectious in the hydrophobic sense. Then it is to be remembered

that this report makes no distinction between syphilis and other venereal diseases, and that there is a very great distinction so far as the relation of the sexes and heredity are concerned; and that these large statistics include the whole class, and, therefore, unless this fact is borne in mind might give an impression which is incorrect and imperfect. Then, it seems to me, that with the series of sad facts which come from such intermarriages, the penalty is entirely too light. We ought to look further, and if we are going to have a law upon this subject the punishment should be but a little less than hanging. Then I hesitate to approve any form of law, and commend it to the legislatures of the different States on any such subject. Suppose it was a law drawn up for the punishment of drunkards, emanating from this Association. We all know what sad things have occurred through drunken husbands, and, sometimes, drunken wives; but I would hesitate very much about the form of a law which would be applicable to all cases of marital drunkenness, and therefore to all that class of diseases, because we look after these matters somewhat locally. The only other point I have to make is, that it puts me in a very awkward position as a physician and sanitarian. If a law of this kind is passed in my State, and a case comes to my knowledge where a man that I know is diseased is about to marry, and I beg with him and use every influence I can, and he still persists, I do not know but that it is my duty to arrest him for a crime. If so, I want to understand that responsibility. If this is not a case where we, as physicians, are allowed to conceal crime it is my duty to arrest him. Now, sir, while I believe that a good result will come from the consideration of this subject before this convention, I have only to express my own views on the matter by this resolution which I propose to offer, as showing that I am favorable to the consideration of this subject, but personally I cannot vote for the law precisely as it is recommended. I therefore offer this resolution: —

Resolved, That the Association refer the majority report and the minority report, and the form of law recommended by the majority report, to the serious attention of the National, State, and Local Boards of Health, leaving it to them to consider the desirability of presenting it to the Legislatures of their respective States and constituencies.

Dr. Billings, U.S.A. — Mr. President, I would like to say a few words on this subject before the question is put on the motion. It seems to me that the very eloquent and very moving report of the committee — the majority report — might, perhaps, be very well characterized by the criticism of a flashy Englishman on being called to look at a magnificent sunset at West Point. He looked at it, and said, "Yas, yas; but don't you think it's a trifle lurid, you know?"

Do we mean to endorse the proposition that out of one hundred and fifty members of this Association there are fifteen syphilitics? Do you mean to take the statistics made up from the class of men that are in the army and navy, confounding syphilis with the very different affection, gonorrhœa, and apply those statistics throughout the country? However,

it is not my purpose to criticise the statistics or oppose the legislation in its specific form; but I wish to call the attention of every gentleman in this room, who is actually engaged in sanitary and official work, and who is in relation with municipal, State, or National Boards of Health, and always trying to secure the organization of such Boards in his locality, to the difficulties and troubles which the passage of this law recommended by the committee, or the endorsement by this Association of this report of the committee, is going to bring upon his work. In the original draft of the first report of this committee, in addition to State and municipal Boards, the National Health Board was also called upon. The chairman of the committee was kind enough to show me that report before it was submitted, and at my request the National Board of Health was taken out. Nevertheless, bringing the former matter formally before this Association, and its passage, with the approval of the Association, has proved detrimental to the National Board. It roused an opposition among a highly respected and influential class of the community, who took it for granted that, as the Association announced that it was an essential and desirable thing, sooner or later the National Board must fall into line. We had a meeting of clergymen and so on, in Washington, and representations made to Congress, that one objection to the National Board was, that it would be trying to regulate these matters in the District of Columbia, for example, which is under the jurisdiction of the United States. Now, as sanitarians, we want a great many things from legislatures and from the people. We want the aid and encouragement of the societies, and of the clergy, and all that very influential class who are opposed to the regulation of this matter by law at present. I am of the opinion that it will be regulated; but, at the same time, I am of the opinion that the passage of any resolutions by this Association, endorsing or urging these conclusions, is going to act injuriously upon the influence of the National Board of Health, and of the State and Local Boards of Health, and will embarrass them, and embarrass those who are interested in them, in obtaining power to deal with things which lie next to our hand, — getting sewerage in the villages, doing away with polluted well-water, etc.; and I am of the opinion, also, that further discussion of this subject in this Association, which is a mixed body, — not a body of physicians, but containing a large number of members who are not familiar with the technicalities of this subject, which is a purely medical one, — is injudicious and unwise; and that putting this matter to the votes of those who do not know the facts, and cannot know them, they not being technical and professional men, is inexpedient; therefore I move to lay the resolution on the table.

Dr. Hibbard, of Indiana. — Mr. President, does that motion refer to the resolution of the committee, or the resolution of Dr. Hunt?

Dr. Billings, U.S.A. — Mr. President, my motion is to carry the whole subject. A vote to lay upon the table a resolution affecting any matter lays the whole subject, and everything connected with it, upon the table.

The PRESIDENT. — The Chair is of opinion that Dr. Billings' position is correct. Those in favor of the motion will manifest the same by the uplifted hand.

The Secretary reported thirty-eight voting in favor of the motion to lay on the table.

The PRESIDENT. — Those opposed will manifest it by the same sign.

The Secretary reported twenty voting in the negative.

The PRESIDENT. — The resolution is laid on the table.

Dr. GIHON. — Mr. President and gentlemen, after a vote like the one just taken I shall not trouble you again. I think if my friend, Dr. Billings, — who will possibly admit that he has not been in contact with sick people as much as some of us, — had the experience I have had, he would not have made the remarks he has made. I have for seven years worked in this matter, and I do not intend to give it up. As long as I remember the one good woman who is now in my mind, — a woman pure and good and virtuous beyond expression; a wife who died a miserable, wretched agonizing death, through contact with her husband, who diseased her, — as long as I remember that woman I pledge myself to work on in this field.

The PRESIDENT. — The next item of business is the report of the Committee on Vital Statistics, Dr. Elisha Harris, of New York, Chairman. In the absence of Dr. Harris his paper will be passed over informally.

The SECRETARY. — Mr. President, I have received the following as the report of the Committee on the Management of Epidemics. (See Reports of Committees.)

The SECRETARY. — Mr. President, in view of the circumstances, which are certainly somewhat exceptional and remarkable, that the Chairman of this Committee on the Management of Epidemics has been always prevented by illness heretofore, and at this time by that practical spirit of helpfulness which alone keeps him away, I believe it would be gross discourtesy to do otherwise than to continue the committee, with himself at its head, and grant it further time to report. I therefore move that the Committee on the Management of Epidemics be continued, and granted further time.

The motion was agreed to.

The PRESIDENT. — The Chairman of the Committee on Vital Statistics, Dr. Harris, is now present, and will present his report.

The SECRETARY. — Mr. President, if the gentleman will allow me a moment, I have just received an informal communication from Mr. A. B. Farquhar, of Pennsylvania, as follows: —

Dear Sir, — I have just been forced to give up all hope of attending our meeting this week, owing to pressing business engagements, that I cannot put off. Enclosed find check for $10, — $5 for renewal fee, and $5 for the benefit of the Association in the way that you think best.

(Signed), A. B. FARQUHAR.

Dr. ELISHA HARRIS, of New York, Chairman of the Committee on

Vital Statistics, submitted this report of the committee. (See Reports of Committees.)

The PRESIDENT. — What is the pleasure of the Association regarding the report of the committee and the resolution?

Dr. HUNT, of New Jersey. — Mr. President, I move that the report of the committee be received, and the resolution adopted.

The motion was agreed to.

The SECRETARY. — Mr. President, I deeply regret to be obliged to announce that there is an error in the report of the nominations of the Advisory Council, as reported this morning. The ballots were not recorded, as they were thrown in the committee, and so it happened that while there were two names elected on the first ballot, only one was counted, and that of Dr. G. P. Conn, of New Hampshire, was omitted. In this way there was one more member elected than the constitution provides for; and the last of the names on the list, as the last elected, should be dropped. The circumstances of the election will be remembered by those who were present. The last name on the list is that of Dr. Gatch, of Indiana. I regret very much that it is so, and that I am under the necessity of moving a reconsideration of the vote, which, as Secretary, I was instructed to cast, and did cast, for the nominees of the Advisory Council.

The motion was agreed to.

The SECRETARY. — Now, I desire, Mr. President, to present the amended report of the Advisory Committee, as follows: —

For President.

Dr. EZRA M. HUNT, of New Jersey.

For 1st Vice-President.

Dr. ALBERT L. GIHON, of U.S.N.

For 2d Vice-President.

Dr. JAS. E. REEVES, of West Virginia.

For Treasurer.

Dr. J. BERRIEN LINDSLEY, of Tennessee.

For Executive Committee.

Dr. THOS. L. NEAL, of Ohio.
Dr. G. P. CONN, of New Hampshire.
Dr. J. J. SPEED, of Kentucky.
Dr. THOS. J. TURNER, U.S. Navy.
Dr. J. S. BILLINGS, U.S. Army.
Dr. H. D. FRASER, of South Carolina.

The PRESIDENT. — The question is now, shall the Secretary be instructed to cast the ballot of the Association for the election of the committee as now nominated? If there is no objection it will be taken by consent. Is there objection? The Chair hears none, and it is so ordered.

The SECRETARY. — Mr. President, I hold in my hand the ballot previously cast, amended by the insertion of the name of Dr. G. P. Conn, of New Hampshire, and the erasure of that of Dr. Gatch, of Indiana, which I cast for their election as nominated.

The PRESIDENT. — And the nominees are elected. The next business before the Association is a paper entitled "The Laws Requiring Medical Men to Report Cases of Infectious Disease and Deaths to the Authorities," by Dr. O. W. Wight, of Michigan.

Dr. Wight read his paper. (See page 17.)

The PRESIDENT. — The paper is now before the Association for remarks.

DISCUSSION.

Dr. THOS. J. TURNER, U.S.N. — Mr. President, the subject is so interesting that I want to say a few words. I have given it a little attention myself, but not so much as the writer. He has given a succinct account of the laws of the United States. I did not hear the beginning of the paper; but at the present time this subject is attracting the attention of our profession in England to a very great extent, and it is on the matter of compensation. It clearly hinges upon the report of Dr. Elisha Harris, Chairman of the Committee on Vital Statistics. The question has been presented to this Association time and again. It is demanded in some States that the physician shall report the cause of death; but the law provides no compensation for the service thus rendered, and the duty is evaded, in a great many instances, simply because there is no compensation attached. Dr. Billings and myself have investigated the matter to some extent, and suggestions have already been presented to the American Public Health Association, that a certain limited sum shall be given for every registration. I would ask Dr. Wight whether he does not think there ought to be some compensation provided for in the law for a service like that, — whether it is the registration of a birth, or a marriage, or a death certificate, — for it is a service rendered, although in some cases it is rendered compulsorily.

Dr. WIGHT, of Michigan. — Mr. President, in answer to that question, I would say that some municipalities provide a compensation for the physician for making such reports. The question discussed in the paper is, whether the physician has a right to refuse to perform such service because such compensation has not been provided. I wish that our legislatures demanding this service from the profession would fix a compensation for it, or an honorarium; and I wish, at the same time, the State would protect its citizens from that class of persons who profess to be and act as physicians, but who are ignorant of the elementary principles of the practice of medicine.

Dr. TURNER, U.S.N. — Mr. President, I do not want it made a gratuity, or as an honorarium, but as a distinct *quid pro quo* for the service performed.

Dr. WIGHT, of Michigan. — Mr. President, as to this distinction between the service of an expert and the giving of this information to the public, on the part of a physician attending a patient who dies of contagious disease, the knowledge of the disease and the knowledge of death are incidental to his profession, — the same as a lawyer's knowledge of a case at law, — and the giving of expert testimony is a matter of compul-

sion; it is guided by an entirely different interpretation of the law. This exercise of the will, as to whether he shall give it or not, is recognized in some States: that his knowledge, which enables him to give expert testimony, is his property in law; and I have no doubt that, if carried to the extreme, the law would acknowledge the right of property in that knowledge which enables a man to give expert testimony; but the other is incidental.

Dr. EARLY, of Kentucky. — Mr. President, this question has been one of interest to me ever since I have been in the profession. There is some legislation for every other class of people in America except the regular physician. We are not the slaves of any particular organization; we are not the slaves of the American government, but under the constitution and legislation of this country we are freemen to a certain extent; but, as a matter of fact, none of us are. My services to any man who makes a demand upon me are worth so much; the value to be determined by my capacity to meet the indications in the case. As to the expert testimony referred to by Dr. Turner, under the old English law, no expert could be compelled by any court on the face of the habitable globe to testify as such until the guinea was paid. That law has never been revoked. I have tested it, and speak from personal knowledge in the matter. There is no law in the matter; there is no statute in the States that can take you or me, or any other gentlemen of this Association, and compel us to give evidence as an expert in any special case without compensation; and it depends upon ourselves to demand it, or to submit to the rulings of the court which may require it. I have seen the thing tested, and have been a party to it. By way of illustration: one of my colleagues in the profession and myself were called as experts in a special case; we proposed to test that matter; we realized this fact, that there had been less legislation, as I remarked, for the medical profession than for any other class of people in existence in this country; and why is this neglect, in the shape of legislation and on the part of legislative bodies of the country, for the protection of the physician? It is simply owing to this fact: as a profession, we have got larger hearts, we have got more humanity, we have got more philanthropy, we have more capacity to enter into the trials and troubles of other people, than any other class of men on the face of the earth, and it is owing to that fact that we have placed ourselves in the position we are in to-day on the subject of fees. I think it is the duty of the physicians in the regular profession, in every State, to combine and appeal to their Legislature for their own professional protection. Here comes up a judge, for instance, who is not learned in the law, who wants your testimony in a State case, or wants mine, or Dr. Beckwith's; we decline to go, recognizing the fact that that old English law upon the subject of expert testimony has never been revoked, and in spirit and letter exists to-day, while it does not appear on our statute books. We say, "Where is our compensation to come from?"—"Oh," he says, "it don't make any difference about compensation. *I summon you.*" We still decline to go, and here comes a mandamus and capias, and we are

compelled to go; but, although you may carry a horse to the water, you cannot make him drink after you get there. That is the position we took as a profession; but, until we move as a body, that class of men I have referred to will inevitably demand of us that which we have obtained by hard labor, by the expenditure of nervous force, and by the loss of physical vitality; and they will continue to demand more and more of us until we act in the matter ourselves.

Dr. RAYMOND, of New York. — Mr. President, the subject before us is of great interest to all those practically connected with Health Departments; and yet it seems to me that the object of the paper is one which, while it may be necessary for those who are connected with other departments, yet it comes as a matter somewhat of surprise to those of us who live in the neighborhood of the cities of New York and Brooklyn. Since the year 1866, when the Metropolitan Board of Health was established, there never has been, so far as I know, any request or any desire expressed on the part of any medical man for compensation for reporting deaths. Certainly, there has been some question in regard to the necessity for reporting contagious diseases; but at the present date I doubt if there is a death in the city of New York or Brooklyn, comprising a population, the two cities together, of two millions, that is not properly certified to by the attending physician by a certificate sent to the Health Department. There is, therefore, in those cities, no necessity for any compensation. The physicians have never demanded it. I think, as Dr. Wight does, that it is a matter that comes entirely within the province of the State to demand of a physician. It comes to him incidentally. Not alone is the physician required to report, but any one, hotel-keeper, boarding-house keeper, the keeper of a lodging-house, the master of a vessel, or any one else, who may be in a position of apparent authority or control; it becomes his duty to notify the municipal authorities of the existence of any case of contagious disease. It would be just as improper, it seems to me, to say to the master of a lodging-house or to the master of a vessel that he must report these cases, and then have him come forward and say, I will report them only when I am compensated. It is not a matter of expert testimony at all, as the cases which have been just referred to. Some five or six years ago one of the physicians in Brooklyn made this claim, — the claim in reference to contagious diseases, — that the municipal authorities had no right to demand of him knowledge which came to him in the way of his profession; and this claim he supported on two grounds: in the first place, that it was in the nature of a privileged communication; and, in the second place, that it was property, and as property it could not be demanded of him without just compensation. The matter was tried in a lower court, and a decision was rendered against him. Only one case has ever been taken up in the city of Brooklyn. Now the decision is accepted as good law; and, so far as I know, no one at present refuses to report these cases of contagious diseases, and there never has been, so far as I know, any objection on the part of the medical profession to sending in records of

death. It is, therefore, a surprise to us, when we take up English papers and the journals of some other States to find that this question is absorbing so much time and attention with medical men. Why should the medical man refuse to send in reports of this kind, when medical men and their families are as much protected by it as any other class of citizens? I look upon it as the duty of every citizen, and the duty of every physician, simply because he is a citizen who has by a mere chance, so to speak, come into the possession of this knowledge, to report it. It is not at all in the nature of a privileged communication, nor is there any right of property in it for which he has the right to demand compensation. We have in the city of Brooklyn adopted a method which is working admirably in reference to this reporting of contagious diseases. We not only require the case to be reported to the Health Department, but our entire city is divided into eleven districts, and a medical man is put in charge of each district. Postal cards, having blanks upon them, for the information desired as to the name of the patient, age, residence, and the disease itself, are given gratuitously to the physicians, and the only time that is taken by them from their valuable time is simply to fill out those blanks, and then to mail it to the inspector of the district. This system is working admirably in the city of Brooklyn, and it enables us in this way to have information within a very few hours of the existence of every case of contagious disease coming under the observation of medical men; and it enables us to take such precautions in the way of notifying the public schools, and notifying all persons, to keep away from the particular locality that may be deemed expedient. I think that a proper comity between medical men and the health authorities of the locality will do away with the necessity of requiring compensation, and do away with all the difficulties that seem to beset so many Health Departments, both in this country and in Europe.

Dr. TURNER. — Mr. President, I hold directly to the legal point. I say that any medical man signing a death certificate is *ipso facto* an expert. He speaks not only of facts he saw, but he speaks from his observation and experience, which makes him an expert. Is not that so?

Dr. HUNT, of New Jersey. — Mr. President, if Dr. Turner wants an answer, I don't think it is.

Dr. TURNER. — Mr. President, he speaks of that which he has learned by study, and experience, and observation. For that service rendered I claim he should have a compensation. This is a subject that is attracting the attention of our medical brethren in England to a very great extent. It is a legitimate demand for pay for services rendered. You, gentlemen, see a case of typhoid fever, and you report it, and say so. How do you know it is typhoid fever? From your experience and reading; and it is expert testimony. Suppose another, not a medical, man comes in; he gives his knowledge this way: "The doctor says it is a case of typhoid fever." I agree with Dr. Wight upon his reserved rights and police powers. I have read the references to which he alluded, and I endorse their correctness; but I hold to the point that expert testimony begins

when the medical man proceeds to state what would not occur to the ordinary observer, or be within the knowledge of an outsider.

Dr. HUNT. — Mr. President, I am aware that, although Dr. Turner holds on to his point very well, as he does to most points, it is a point he will have to let go of, I am very sure. I have had occasion to study this matter from the beginning to the end, and I am very sure it is not right to give the impression that the profession of either England or Scotland, as a profession, are very much excited about this matter. You will find here and there medical men that have talked a great deal about it, and who make a great deal of noise about it. I know one who resisted the registry law for ten years, and then gave it up. I once investigated this matter very carefully, and consulted a lawyer about it, and he explained to me just how the matter was, and that the lawyers, just as the physicians, have to render a certain service to the public without any fee whatever. It is entirely incorrect to suppose that a doctor is entitled to compensation in these matters; and the more one looks into it the more he will see that that is the case. I am a man who refused to do this duty, as a young man, without compensation; but when I came to look into it, I found that the law was against me all the way through, and I yielded.

The PRESIDENT. — If there is no further discussion upon this paper the next paper in order is that of the Hon. Erastus Brooks, of New York, on "Sanitary Government, its Principles and Effects."

Dr. HUNT, of New Jersey. — Mr. President, this is a very valuable paper; and it is now after one o'clock, after our usual time for adjournment, and I would inquire whether it is not the sense of the Body that we adjourn and take this paper up right after dinner? I think if that was done it would have a much better effect.

Dr. HARRIS, of New York. — Mr. President, I am informed by the author, who is away on public business, that if this paper is read by title it will be satisfactory to him.

Dr. GIHON. — Mr. President, I move that Dr. Harris read Mr. Brooks' paper by title at present, and that he be invited to read it in full this afternoon, or evening, if the time permits.

The motion was agreed to.

The PRESIDENT. — The Society will then stand adjourned until 3 o'clock P.M.

AFTERNOON SESSION. — 3 O'CLOCK.

The PRESIDENT. — The Association will please come to order. Under the head of unfinished business, we will first take up the Report of the Treasurer of the Association.

The Secretary presented the Treasurer's Report. (See Treasurer's Report.)

The SECRETARY. — It is proper to add a statement to the report, for the information of the members, and that is, that the reason of this large balance on hand, $2,274.63, is owing to the fact that the last volume, volume 7, of the Proceedings of this Association is still in the hands of the printer;

and when the amount due from the Association on its contract to the printer is paid, and some other expenses connected therewith, it will leave a net balance of some $300. It is safe to say that when all the liabilities of the Association for the year just ended have been met, there will be a balance to carry over to the coming year of, at least, $300.

The PRESIDENT. — The usual course is to turn the accounts of the Treasurer over to an Auditing Committee. Shall the Treasurer's Report take the usual course? If there is no objection, the report will be so referred by consent. Is there objection? The Chair hears none, and it is so ordered. The following gentlemen will serve on the committee to audit the Treasurer's Report: Dr. Wight, of Michigan; Dr. Raymond, of New York; and Dr. Robertson, of Iowa. The committee have leave to retire. The next business in order is the reading of papers. The first paper on the programme for this afternoon is a paper entitled, "The Relations of Health Associations to the Practice of Medicine," by Dr. J. J. Speed, of Kentucky.

Dr. Speed read his paper. (See page 39.)

The PRESIDENT. — The paper is now before the Association for discussion. (After a pause.) If there is no disposition to discuss this paper, the next paper on the programme will be read. It is a paper entitled "Negro Mortality in Memphis," by Dr. G. B. Thornton, of Tennessee.

Dr. Thornton read his paper. (See page 177.)

The PRESIDENT. — Dr. Thornton's paper is now before the Association for discussion.

DISCUSSION.

Dr. A. R. KILPATRICK, of Texas. — Mr. President, I have heard Dr. Thornton's paper with a great deal of interest, for I have been travelling that same road myself, and taking observations, for several years past, in regard to the thesis of the colored race. I can say its mortality has greatly increased since the emancipation, — vastly increased. During the time of slavery for a negro girl to die of consumption was very rare. Now they are dying with it as much as the white race. There is one death every month in the town where I live, and mostly among the females. As to the venereal disease before the war, before emancipation, it was very rare. The occurrence of a case of that kind on a plantation was very rare, and was noted by the negroes generally; and the negro so afflicted was, to use a familiar expression, "spotted"; he was tabooed. As to the relative mortality of cholera in the two races, and small-pox, the negroes fall like flowers before the frost under cholera and under small-pox. They have no resisting power to those two diseases. There is more fatality now in cholera than there ever was before. During the epidemics of 1842, 1849, 1850, and 1856, and in all the epidemics before the war, there were thousands of negroes died with those diseases; even with the very best of management, and the best of medical aid, they died in spite of everything with cholera then, and it is so yet. There

is no improvement in that particular. In the cholera epidemic of 1866; the fatality was so much greater with them that in fact there was hardly a case that got well. As to the greater increase, or the relative increase of the two races, I am satisfied that the census of 1870 was very faulty. I have paid a great deal of attention to the census and statistics of that character, and I know very well that in the region where I live the census of 1870 was decidedly faulty; and the increase from 1870 to 1880 was unaccountable on any other ground, because we know that the race does not increase in any greater ratio than the white race by the natural process, and we all know that there was no immigration. There is a strong inclination with the negroes at the present time to abandon the country, to abandon the farms, and to live in town. They are gregarious decidedly, and fond of company, fond of show, and fond of excitement, and everything that is met with in city life; and they love to live by their schemes and wits, without work, so they are induced to go to town where they can beg for a living, or have a little job of work now and then, or wait on white people. I am glad to see that the Doctor has attracted the attention of the Association to this channel, and I hope to hear further discussion on this subject.

Dr. HERRICK, of Louisiana. — Mr. President, this subject has attracted my attention somewhat. Last year I had the honor of reading a paper before this Association, touching upon the relative vital forces of the two races. My study has corrected a preconceived error that I had formed, in company with others, particularly in the South, and that is in regard to the rapid increase of the colored race. I found that, if the census could be at all trusted, the increase of the colored population throughout the country, and particularly in the Southern States, was more rapid in 1870 and 1880 than it had been during any previous ten years in the history of our country. I studied as to the cause of mortality between the two races, and made some comparisons. I found that the mortality from most diseases was considerably greater among the colored population than among the white population. This was particularly the case in diseases of the lungs, and other acute diseases, pulmonary consumption, and diseases of the alimentary canal. Small-pox also produced greater havoc among the colored people than among the white, chiefly from the want of proper vaccination. Contrary to what I supposed, I found that the mortality from malarial diseases was nearly equal in the colored population to what it is among the whites. This, however, could be attributed not so much to a predisposition to these diseases, as to the want of proper treatment, and neglect; their poverty and want of foresight not giving them an even chance with the white population for fair treatment. But, notwithstanding the high rate of mortality, the legitimate increase of the population was greater among the negroes than among the white population, even in the South. This can be accounted for only upon the supposition that the birth-rate of the colored people in the South is greatly in excess of that of the white population of the South, which also is greater than that of the white population of the North. That is the only way to

account for it. The statistics are a little defective, and information in regard to the birth-rate can only be obtained from the decimal census; and the figures showing the death-rate can only be obtained for a few of the larger cities. But, using both sources of information, I came to the conclusion that while the death-rate of the colored people of the South and throughout the country is greatly in excess of that of the whites, excepting from malarial fevers and delirium tremens, — which is quite uncommon among the colored people, — in spite of this great increase, while they increase faster in population than the whites, there are one or two classes of diseases in which there is a great excess of mortality among the colored population in some of the Southern States. Death is three or four times as common among new-born children of the colored race as it is among white children, and in the extreme Southern States it is much more common than elsewhere, — more prevalent in New Orleans than in any other city in the country.

Dr. RYAN, of Texas. — Mr. President, I shall say but little on the subject. My experience has agreed with Dr. Herrick's. I certainly think that negro women are more productive than white women. There is one thing that a good deal has been said about, and a good deal has been written about, especially before the slaves were freed, and Dr. Thornton added something in regard to it in his paper, and that is as to the vitality of the mulatto race. I have studied that question and watched it a great deal, and I am compelled to believe that they are as prolific, and that they stand shocks as well as either race. Now, it takes several generations for the blood to get mixed. The first generation the subject has generally a very white skin, and after a few generations of mixed blood the skin is darker and the hair straighter. I saw last year a shock to a mulatto, — a case that would have killed most persons, — and he stood it well. It was a boy; his mother was three-fourths white, and his father half, and he was not twenty years old. He was running his horse on Sunday and was thrown against a tree, which produced an abscess of the liver. Twelve weeks afterwards I opened it with care, letting out what I suppose were two gallons of pus. I opened it between the navel and the end of the eighth rib, between the line coming from the superior spinous process to the rib. It would run about eight days, and he would spit carbolized water, which was put in there, and we measured some days a half gallon that he would spit up. We fed him on the most nutritious food we could get, and it finally ceased, and he is now well and hearty. I think there are few people who could stand that shock. I extracted the uterus of a mulatto woman last fall, and I think it was only eight or ten minutes until she had rallied, and her pulse was good and her temperature good. In all the operations I have performed upon mulattoes they have stood it well, and I question that their vitality is any less than the other race; and, so far as my observation goes, they are as prolific as the other races.

The SECRETARY. — Mr. President, I have received the following communication from the Local Committee: —

MOSES T. RUNNELS, M.D.: —

Dear Sir, — The Belt Railroad and Stock-Yards Company extend a cordial invitation to the members of the Association to visit the Stock Yards, and take an excursion around the city on the Belt road at their convenience. A special train will be placed at their disposal, and will leave the Union Depot at such time as the Association may designate.

Very truly yours,

(Signed), E. A. COOPER, *Supt. Belt Road.*

The SECRETARY. — Mr. President, I move the acceptance of this invitation in the usual form.

The motion was agreed to.

The PRESIDENT. — I will say to the Association that the Executive Committee will probably arrange a time for this excursion, if time can be found, and it will be announced this evening. The Belt Railroad will place an excursion train of passenger cars at the disposal of the Association at any hour they may arrange.

The SECRETARY. — Mr. President, I am desired by the Executive Committee to announce that, owing to information of satisfactory character received since the election, the following-named gentlemen have been transferred to active membership in this Association: —

Dr. J. B. CASEBEER, Auburn, Ind.
PAUL GIST, Esq., Talladega, Ala.

Mr. President, I am also directed by the Executive Committee to announce the following names, as recommended by the Executive Committee for election, respectively as associate and active members of this Association. (See list of members elected.)

Dr. HUNT, of New Jersey. — Mr. President, I move that the Secretary of this Association be instructed to cast the ballot of the Association for the election of the candidates, as recommended by the Executive Committee.

The motion was agreed to.

The SECRETARY. — Mr. President, I hold in my hand a ballot which bears the names of the gentlemen who have been recommended respectively for active and associate membership, which I now cast for their election.

The PRESIDENT. — The next paper, according to the arrangement of the Executive Committee, is the paper of Dr. James F. Hibbard of Indiana, which was withdrawn on account of his temporary absence at the time it was to have been read. The paper is entitled, "Propositions concerning Vaccination."

Dr. Hibbard read his paper (see page 123), and in conclusion said: Now, Mr. President, I have a word to say in regard to the last of the propositions which I have submitted in this paper; and that is, in regard to compulsory vaccination. There was an order passed by the State Board of Health about eleven months ago, very soon after its organization,

that all persons, or children within the first year of their existence, should be successfully vaccinated, and a certificate made of it; that all persons living in the city should be successfully vaccinated; that all persons coming into the city should be successfully vaccinated within a year; and that after so many days, — thirty days perhaps, — after the 1st of January I think it was, no one should be admitted to the public schools, or to the private, denominational, or sectarian schools in the State of Indiana, as pupil or teacher, unless such person had a certificate of successful vaccination, from a reputable physician. This was promulgated to the county health officers and the county organizations, and by them to the people. I happened to be health officer in Wayne County of this State, a county of forty-one thousand population, with between seventeen and eighteen thousand people in the corporate limits of the city of Richmond. We suppose ourselves to be unusually cultivated, and fully alive to all the advantages of belonging to the highest civilization; and it seemed, from the way the people took hold of this proposition, so far as the school population was concerned, it might be carried out. I have no faith in anything that is compulsory in a general population in this State, or any other State; but, as a health officer of the State, with the assistance of the Superintendent of Public Instruction, after consultation with the heads of other educational institutions, our college, and some of the denominational schools, and through the assistance of the Prosecuting Attorney of the county, I undertook to get up a scheme which compelled every teacher and scholar to be vaccinated before they would be entitled to the rights of the school. I thought my scheme was so perfectly arranged that nobody could escape, and I began. There was this provision in it, that it was not to be in active force until the 1st of July, and I began to instruct the people on the first day of March, through the enumerators of the school children, notifying the parent and guardian of every pupil, and every person of school age, in the county; and it was served by the enumerators upon every householder, parent, and guardian of a pupil. Then followed instructions to the teachers, that, after the 1st of July, whenever a pupil came into the school — in the first place, we cautioned the authorities that they were not to engage teachers without seeing their certificates of vaccination, and I prepared certificates and sent them to every teacher in the county. Then the teachers were first to show them before they were employed, and then they were to demand them of the school children as they came into the school, — a certificate of the kind prescribed. It all seemed to be going on very well, until there was a meeting of the teachers in the western part of my county. I went over there by arrangement with the Superintendent of Public Instruction, and I had a talk with them, and I thought they seemed to receive my communication with a little coldness. I had first talked with the School Board, and my proposition was generally approved of, with the intimation that there would be a little opposition in the south-east, and perhaps in the south-western part of the county. After I had left them they adopted resolutions about to this import, that while they really were very favorable to vaccination,

and that all the school population ought to be vaccinated, but that they objected to the teachers of the county being transformed to something in the nature of police officers, and forced to see that this order was executed. They were perfectly willing that the health authorities should require everybody to be vaccinated, and that no pupil should be admitted to the schools who had not been vaccinated; but they did not want to be made executioners of the law, and they protested against it.

The PRESIDENT. — Dr. Hibbard's time has expired.

Dr. HUNT, of New Jersey. — Mr. President, I move that Dr. Hibbard's time be extended.

The motion was unanimously agreed to.

Dr. HIBBARD. — Now, Mr. President, I had an interview with those teachers, and know what was the matter. They stated the question as I have stated it to you, — that it was no sentiment against vaccination, but that the teachers did not want to be made the agents to see that this was properly executed. Now, I knew very well from the circumstances surrounding the matter, and from information that I received, that the difficulty was not originally with the teachers, but with the people themselves. While this preparation was going on, the people had taken a turn against compulsory vaccination; and up in one part of the county they had informed the public-school officers that, if they did not employ teachers who would repudiate compulsory vaccination, they would not send their children to school at all, but would get up private schools. And this excitement grew out of the fact that a poor, scrofulous child, whose parents belonged to a most excellent class of people, who are very clannish, and live together, but who are amongst the most excellent citizens we have in the State of Indiana, — this child came down into the country to its home, and, after a series of illnesses, finally died; and it was believed that its death resulted from vaccination. It was certainly vaccination that began the series of evils that ended in death. Another time there was a child died in the south-west part of the county, that died of kidney disease; but it was asserted that it died from the results of vaccination, and then came up the storm. I offered to go there and make an explanation of bovine vaccination, and of how little danger there was in it; and I would have spent such time with them in their assemblies, or in their houses, as might be necessary; but I was notified that if I went into this corner of the county I would be mobbed, — that such was the state of feeling there; and they are really good people there, too. Now, the upshot of it all was, that when the school board of the county came together, all of those who had the management of schools in the county and townships, — trustees and presidents of the school boards, etc.; and at that time there were twelve school boards in the towns and cities of my county, — we talked it all over with the Superintendent, and, after a friendly conversation, I asked them what their convictions were as to the propriety of carrying out this order; and every one said that it would not only be impracticable, but they believed it would make such a disturbance in the county that no one could stand it; and it had to be aban-

doned; and I then published an official notice that no further effort would be made towards compulsory vaccination of the school-children of Wayne County for the present. And whenever you come to put this plan of compulsory vaccination into execution, so that it will be really complete, you will meet with this very same difficulty. So far as you talk generally, and say this thing shall be done, and then let the people do just as they please, and no more, you will have no trouble. But when you come to make it certain, and definite, and complete, you will find just such an opposition to it, and just such a feeling of indignation among the people, and it will have to be abandoned wherever it is undertaken.

The PRESIDENT. — If there is no discussion on Dr. Hibbard's paper, we will now hear the paper by A. W. Cantwell, of Iowa, entitled "An Epidemic of Small-pox by Direct Importation from Germany." This paper is taken up a little out of its order, because the Doctor is obliged to go home, — the court having a claim upon him. Upon the conclusion of this paper the discussion upon the subject of vaccination will be resumed.

Dr. Cantwell read his paper. (See page 107.)

The PRESIDENT. — Before the discussion is commenced, the Secretary will read, by title, a paper which bears upon this subject.

The SECRETARY. — Mr. President, I have in my hand a paper by Dr. J. N. Detwiller, entitled "Small-pox in Bethlehem, Pennsylvania, and vicinity, in 1881 and 1882." (See page 111.)

The PRESIDENT. — The subject of vaccination is now before the Association for discussion, as is also the paper of Dr. Cantwell.

DISCUSSION.

Dr. HUNT, of New Jersey. — Mr. President, I only rise to call attention to two or three matters upon which two or three others, as well as myself, may need information. I beg first to call attention to two or three points made in the paper read yesterday by Dr. Abbott, that seem to me to be of especial importance, and should be impressed on the minds of medical men and of sanitarians, if they are correct, as I believe the most of them are. I notice that he gives as the very extreme limit within which quills retain their virtue, as three weeks, and seemed in his paper, even to restrict it to two weeks. I find also that according to the testimony given by him, — and I am inclined to think it is the opinion of others with whom I have talked, — if the crust is, as he states, always made up of extraneous matter, containing dust and even matter from the stable, etc., that the profession of the country ought to come to the conclusion that, as a rule, the crust should never be used. I think there is a very great distinction between the crust, found in connection with bovine vaccination, and that derived from the child. And if a disease like anthrax, or anything of that kind, prevails among the cattle we use, there is far greater danger in the use of crusts than in the use of lymph upon the quill. Therefore, I say, if I rightly understood his view, and the views of three or four others who are authority in this matter, crusts should never be

used. You remember that he cited cases of illness from the use of crusts, direct and well authenticated. Then also the same applies to glass tubes. There were also two or three other points raised; one as to the quantity that can be derived from a single animal. You remember that Dr. Cantwell stated that four thousand points were not excessive to be derived from a single animal. The fact noticed by him that there is often a delay of one or two days in the perfection of the induction, and that also it is somewhat longer in its course, is an important consideration in a family in which small-pox already exists; and the question will frequently arise whether human lymph, because of its greater rapidity, should not be used. The matter of disease showing itself from the use of bovine virus is in three directions. I think we have long recognized a form of eruption, which has generally been called herpes, or herpetic, from the use of animal lymph, but I never knew it to be attended with any serious evil. And there is the strawberry blossom, or exudation; if any one knows how to account for it he knows what Dr. Taylor don't know, and I think we will all be glad to hear from him. I have vaccinated myself a great many times, and I used bovine lymph, and got that result, to my great discomfort, for it continued sore for two or three weeks. I think this is a matter upon which we can all be profited by discussion, and I want to present these points as matters of thought, which are open to discussion: *First* — There is such a thing as protective Jenner vaccination which has not deteriorated. *Second* — There is such a thing as protective bovine vaccination which has not degenerated. *Third* — There is such a thing as protective vaccine, which can be derived, if needed, from small-pox passed through the cow. *Fourth* — From some one or all of these lymph can be procured, if necessary, as a protective against small-pox. *Fifth* — Resort to the third is unnecessary at present. *Sixth* — Since this is the case, we must not allow the incidents of vaccination to embarrass or demoralize our well-founded confidence in vaccination as a specific preventive of small-pox. *Seventh* — The great work of sanitarians and of the medical profession is to protect themselves and the people from all the incidents and accidents that may peril our power of protection by vaccine lymph, of which the following are the most prominent: *A*, Vaccine produced by improper methods, or gathered by unskilful operators. *B*, Vaccination performed by unskilled manipulators. *C*, Vaccine used in a state imperfect by reason of age, by reason of the admixture of foreign matter, or by reason of the conditions of the individual or the animal from which it was procured. *D*, Vaccination on persons at the time in an improper condition, or during a period of special epidemic conditions. It is possible so far to eliminate all these incidents, so as to make vaccination an indispensible and well-nigh universal protection from small-pox.

Dr. Devron, of Louisiana. — Mr. President, I fully agree with the remarks of the last speaker, except on one subject, and that is as to the third source of vaccine, — the vaccine obtained, if I understood the gentleman correctly, by introducing of human small-pox into the cow, or

into the bovine species, and reintroducing that into the human system as a specific against small-pox, as vaccine. I would like to know if I understood the gentleman rightly; I would like to be sure.

Dr. HUNT, of New Jersey. — Mr. President, that is what I said. I did not move that as a resolution; I merely put it in my remarks as a suggestion. I propose to discuss the matter at another place. I merely threw that out as a proposition for discussion here.

Dr. DEVRON, of Louisiana. — Mr. President, that I must certainly protest against, as the very best argument that could be brought to bear to make everybody refuse vaccination. After reading, lately, the proceedings of the Anti-vaccination Meeting held in Europe, I am prepared to say that that was the strongest argument used, — that cow-pox, or vaccine, has been itself the means of perpetuating small-pox; that by the repeated vaccination and inoculation of the bovine species we are perpetuating small-pox. Of course that is an exaggeration; but if we go to work and put into their heads the idea of our putting genuine small-pox into the cow, and then extracting from the pustule something that we claim to be protection against small-pox, the weapon will be so terrible that no law will succeed in compelling men to accept vaccination. We might as well go back at once to the question of inoculation.

Dr. HILLIS, of Iowa. — Mr. President, I do not get up for the purpose of discussing the question of vaccination. That was discussed yesterday by myself, when I said all that I care to say about it. But I wish to refer to the paper read by Dr. Hibbard. Is the discussion of that paper in order, or are we simply discussing the question of vaccination?

The PRESIDENT. — We are discussing the general subject of vaccination and small-pox in a large way. Any remarks upon Dr. Hibbard's paper are in order.

Dr. HILLIS, of Iowa. — Mr. President, I simply want to dissent, and, as a member of this Association, put myself upon the record as in opposition to the opinions and views announced in Dr. Hibbard's paper, in regard to public vaccination. I understood the Doctor, if I heard him rightly, and I think I did, to say that he did not believe in public vaccination, and that he thought it was impractical, and it could never be enforced in this community, in this State or in any other. Now, I happen to know that it has been enforced in my community without any trouble. I apprehend that one reason why the Doctor failed in enforcing it in his county — and I am sorry that the Doctor is not present to hear my remarks, for I always dislike to discuss a paper in the absence of the author — I apprehend that one of the difficulties and one reason why Dr. Hibbard failed to enforce public vaccination in his county was that he gave the people too much time to think about the matter, and discuss it, and work up opposition to it. He himself says that when the time arrived he met with opposition worked up after the announcement, — that is the substance of his remarks, — and he was threatened with being mobbed, and he backed down; which was very unfortunate. There is where the Doctor made his mistake. Now, sir, in my town, as I said yesterday, we

have had public vaccination during my residence in that city, and under my jurisdiction as health officer, twice. Twice we have publicly vaccinated our city. We did it, however, without talking about it. We did not ask the public for their consent to issue an order for the enforcement of public vaccination. The first step was to issue an order closing the public schools and the Medical College. The second time I refer to was, in the main, simply a repetition of what we did the first time. The public schools were closed by order of the Board of Health, over which I had the honor of presiding; and we issued an order closing all places of public amusement, not only the opera-houses and theatres, but the churches; and next was an order for public vaccination. The machinery having been provided and the city districted quietly by the Board, and the physicians appointed for the purpose, the announcement was made in the paper that on a certain day — a very short time ahead — the matter would be proceeded with. It was proceeded with, without any opposition, and with but one or two arrests and fines, which were afterwards remitted because the parties afterwards consented to vaccination. There was no furor gotten up about it. There was no opposition, no threats of mobbing, or mob violence. Now, I apprehend again that one of the difficulties in regard to the enforcement of public vaccination lies in the conditions under which it is to be enforced. My meaning is this: for instance, that if there is a small-pox scare, and small-pox is in your midst, there will not be much trouble about the enforcement of public vaccination. But if you attempt to do it when there is no small-pox, and when there is no apparent necessity for the enforcement of public vaccination, you would have difficulty. I do not know how it was in the Doctor's county. It is quite likely they had some scare in Richmond. It is on the great public thoroughfare between the East and the West, — I happen to know something about it; I used to have the pleasure of residing in this city, some years ago. I think Dr. Hibbard made a mistake in his way of managing the case. We closed up the schools and enforced vaccination without any trouble. We closed up those schools until such time as the Board of Health would issue an order consenting to their being reopened. In the meantime we had a conference with our Board of Education, and we governed the whole matter. The schools were not opened until we told them to go ahead. At the same time we instructed the superintendent of our schools to instruct his principals, and they their assistants, to permit no scholar, no child, and no teacher, to enter those buildings for the purpose of carrying on their avocations until they produced certificates, not of "successful vaccination," but of "proper vaccination." There is another mistake that I think Dr. Hibbard made, that is, in issuing the order for "successful vaccination." How can you tell? We issued our order for vaccination and revaccination in all cases where it was apparent to the vaccinators that it was necessary, or ought to be done, and we entrusted that duty to men of judgment and position. Our certificates then certified that the person holding the certificate — superintendent, or a teacher, or a principal — had

been properly vaccinated; not successfully vaccinated, but properly vaccinated; and that met the whole case, and we had no trouble at all. I am sorry that a gentleman of intelligence, — with all due deference to Dr. Hibbard, — living in that highly enlightened and accomplished community that he referred to, educated up to the highest standard of polite literature and the classics, and all branches of knowledge, and the liberal arts, should write such a paper and read it in this Public Health Association, for the reason that these papers find their way to the public, and the public read and are impressed with them; and it is but a step, in my humble opinion, in the direction of educating the public to opposition to the very measure that we want to enforce, to read such a paper here.

Dr. D. H. Beckwith, of Ohio. — Mr. President, I think I can reply for Dr. Hibbard. I regret that a man's paper should be criticised so severely in his absence. I know that Dr. Hibbard has lived in a more intelligent community than the Doctor who has just spoken. Now, in regard to Dr. Hibbard's paper, his remarks seem to me to be very applicable to the question under discussion. If my friend here in front could say to those children that he guaranteed to use successful, reliable, and pure vaccine virus, he would be justified in proceeding with his compulsory law. Unless he can do that, according to law he would not be justifiable, because the law must guarantee protection to every one before it can be enforced; and I say that at the present stage of vaccine virus, while we have some that is reliable and some that is unreliable scattered over the country, that it cannot be done. Another point in regard to the compulsory law; perhaps some of you are familiar with the cases just brought to light in Chicago, where two small children, who had been vaccinated successfully two years ago in Iowa, who had good pits on their arms, were, according to the laws of Chicago, compelled to submit to re-vaccination, or to bring certificates of vaccination from their physician to Dr. Hall. The children were perfectly healthy before; and, in pursuance of this order, submitted to re-vaccination, and were then laid up for five weeks. The result is, that suit has been brought against the city and Dr. Hall for $5,000. Now, Dr. Hibbard is too careful a man to do anything that would do harm in a community, and I think his paper is a good one. In Chicago, a Dr. Chamberlain vaccinated, on January 9th, two children of German parentage; they were of healthy parentage, and healthy children. The boy had a spurious pustule, and in a few days high fever; but no genuine pustule developed itself. The girl commenced coughing in a week or ten days, and in six weeks after vaccination she commenced losing health; the temperature of her body went up to 103 or 104, and within nine or ten weeks after vaccination she died of consumption; and her lungs, or a portion of them, were forwarded to me, and they were completely studded with biliary tuberculosis. That is one case that don't prove anything; but the people were fully satisfied that the death was produced by vaccination.

Dr. Griffin, of Wisconsin. — Mr. President, in answer to the question propounded by Dr. Hunt, with regard to the raspberry exudation,

or the growth on the arm, I would give it as my opinion, although I never saw a case of that kind, — but I have had quite a number of them reported to me during the past winter, — my judgment in this matter is, that it is the result of fluid or lymph used from an improperly developed vesicle upon an animal. Like produces like, and I infer that in this case that result followed; I know of no other explanation. Some local septic action is set up, to which there is a proliferation of abnormal tissue, which continues for some time. In regard to the appearance of the vesicle following the use of bovine virus it is a common manifestation, and it is a harmless thing, never attended with any inconvenience or trouble, except that it alarms the friends, or the family, or the mother, who do not know the exact meaning of it; but it always passes away in a few days, and I have never known any bad results to follow. With regard to the variolation of the cow, I have this to say, that I have no anxiety, no fear that that process will be introduced as a method by which vaccine virus will be gathered. I have this further to say, that I have been surprised at the ignorance which prevails among medical men, in the community generally, with regard to the source of the lymph which is used in propagating animal vaccine. There seems to be quite a general belief that we use pus from the small-pox to propagate in the animal the product which we furnish to the public. It amuses me, and surprises me, that so many medical gentlemen still hold to that idea. Only this last week I received a letter from a gentleman in Illinois, who reported to me that he had just completed the writing of a work on small-pox; that the completion of that work awaited my answers to fifteen questions, which he propounded to me. All those questions were questions relating to the variolation of the cow; and the reading of the note containing them led me to believe, confidently, that the poor man had been laboring through the great work of writing this book on small-pox while he was under the impression that the men who are propagating animal vaccine were using pus from the sores of small-pox patients. I had the pleasure of referring him to a quantity of literature upon that subject, which I am sure will occupy him some six months, if he is faithful in reading it, before he completes his work. Now, with relation to the variolation of the cow, I want to say to my brother Hunt, and I want to advise him, first, if he is writing an article on the subject of the variolation of the cow, that we shall read it with profound interest; secondly, if he writes such an article, I beg of him to furnish it to us, and the profession, and the public through the medical profession, and I beg of him not to introduce it into a State report under the authorities of State Boards of Health; it will, I fear, mislead, misguide, and do damage. A great many men have embarked in this enterprise of variolating cows. Probably no man has ever given it the attention that Robert Seeley gave to it in the years 1837 and 1838; and an article from his pen, — a report from him to the Privy Council, — published in the *British Medical Journal* of 1838, is well worth the perusal of any man who wants to study up on this subject. In that paper the Doctor states that he performed experiments on some three hundred and

fifty heifers, or young cows; that, the difficulty of commanding success by this method was so great, out of the whole number of three hundred and fifty, he succeeded in producing satisfactory results in only thirty-five, or thirty-seven, — I have forgotten which. The best of these results he continued through the series of heifers, and, to his mind, he thought he produced a lymph which was satisfactory, which demonstrated to his mind the possible relations between the small-pox in the human subject and the cow-pox, or vaccinia, in the cow. But if that product was utilized for public service to any extent we are not informed; the inference is that it was not. Dr. Ceeley was, perhaps, the most successful man in these experiments of any man who has embarked in it; and a great many men have embarked in it in Europe and this country. Most of them have come to grief; and, instead of scattering a supply of reliable and protective lymph, they have scattered small-pox, and brought fire and distress upon themselves and their friends. Considering the embarrassments attending these experiments, the difficulty of variolating the cow, and considering the risks attending it, I think we have no reason to fear that this will be the source of the supply; not, at any rate, until we have much more light in this direction.

Dr. Wight. — Mr. President, some months ago I had occasion in making a partial study of the subject to refer to the experiments of Ceeley, in England, in connection with Badcock; but I need not repeat the statistics given here by Dr. Griffin. He states accurately, if I remember rightly, the number of cows vaccinated, and the small number of successes and partial successes obtained. But on another point I think Dr. Griffin is mistaken. I remember that John Simon — and there is no better authority in the world than John Simon — stated in one of his reports for 1853, if I remember rightly, that to his knowledge about forty thousand had been vaccinated by Ceeley and Badcock's vaccine, which was recorded by Simon and others as a new and valuable source of vaccine matter, which is a very important fact. I have no doubt, from the study of the subject that I have made, that it is possible, but it is extremely difficult, to convey human small-pox to the cow, and obtain valuable vaccine lymph in return from the cow. I am not ignorant of the experiments that were made on the continent. There was a Commission appointed by the French Government to carry on these experiments for a long time at Lyons, and some of the most skilled medical men were in that Commission, and they gave up the subject as not successful, and pronounced against its possibility. There was a large Commission in Italy that shared the same fate. And there was also a Commission in Belgium, in which Commission was the celebrated Dr. Warlomont, perhaps our highest authority upon the matter of vaccination in our books, and that also failed. There was an instance in the Lyons experiment of reconveying small-pox from the animal vaccine to the human subject. I cannot give you the points here in a ten minutes' speech, and this is not the place to give them; the place is in the medical journals. That is the place to ventilate this question, instead of in the State reports. If I re-

member rightly, it has been demonstrated that the original small-pox matter reconveyed from the animal to the human subject does produce an inoculation of small-pox, but there is no vaccinia as the result of the inoculation of the animal; but the original matter was reconveyed from the animal to the human subject. Now, I am firmly of the opinion, from the analogy of the case, that real vaccinia is analogous to, and identical with, if you please, small-pox. This disease, carried from the human subject to the cow, is transformed in certain of its properties, but not in others. It is no longer contagious or infectious by contact, but only by inoculation, after it has passed through the lower animal. We have an analogy in certain other diseases conveyed from the human subject to the animal, which are not infectious after transmission, but only inoculative. I think it is the same with vaccinia in its relation to variola. Now, unless there is some essential bottom identity between the vaccinia disease and the small-pox, why, in the name of science, should the vaccinia disease be preventive of small-pox? We have no such thing in the whole series of zymotic diseases that we have been scientifically studying as the substitution of one zymotic disease for another. You cannot prevent measles by scarlatina, nor small-pox by scarlatina. You cannot prevent one of these diseases by another. If there is any real foundation for the belief, — and it seems to me nothing has been more clearly and fully demonstrated than the fact that vaccination does prevent small-pox, — if there is any real prevention, and I repeat that I know there is, it is from the bottom identity of the two diseases. My friend from New Orleans, so earnest and zealous in all things, showing commendable spirit to those around him, told us of some man who proposed to attenuate this small-pox virus by milk, and in that way producing vaccine. That experiment was performed in Germany long ago. After the small-pox virus was attenuated in milk, then a person was vaccinated, and then this small-pox matter from that person was again attenuated, and the attenuation was continued to the tenth degree, when they obtained a virus that would produce a seemingly genuine vesicle. This is all of scientific record in one of the highest authorities of Germany. Now, I want, while I am on my feet, to submit one other point in regard to public vaccination, which is in my mind, and that is this: just in so far as the State has authority, and exercises the authority in its police powers, and compels vaccination, just in so far is the authority of the State bound in honor and justice and right to say that the matter used in that enforced vaccination is absolutely reliable. It should leave nothing to chance whatsoever; and I am sorry in looking out in the past year of small-pox epidemic, I am sorry to see that American men have engaged in the production of vaccine virus without the proper qualifications, merely as a mercantile speculation, subject to all the temptations of commerce, and in that way make themselves in fact, if not in law, real criminals before the public. I think the State should look after it. I think no man should be allowed to sell vaccine matter, or produce it for the public, without the supervision of the State. The State undertakes to regulate the places where beer,

whiskey, and other intoxicating drinks are sold, but infinitely less dangerous to the public is the drinking-place than the place where they make spurious vaccine. They will convey some kind of deleterious disease instead of vaccinia. I know my friend Dr. Griffin, — I know there is not a more conscientious man standing in shoe-leather on this earth than Dr. Griffin, — and he has made good vaccine virus, and in that way is a benefactor to the public. I have used it exclusively in his own State in the sanitary administration of the largest city, and I found, in a pretty extensive practice, that ninety per cent. of his points produced real vaccine pustules on the arms of children not previously vaccinated.

The PRESIDENT. — Dr. Wight's time is up.

Dr. FOSTER, of Georgia. — Mr. President, I move that Dr. Wight's time be extended.

The motion was agreed to.

Dr. WIGHT. — Mr. President, last winter, in Detroit, I endeavored to get vaccine points from Dr. Griffin, and could not, as his orders were then too heavy, and his promises were too many. I experimented, and received vaccine points from one or two establishments, and because they were not successful I do not care to announce the names of those producers here. At length, after repeated failures, I wrote to Dr. Martin, of Massachusetts, and now, for eight or ten months, I have been receiving daily from him vaccine points, and they work in my hands just as well as Dr. Griffin's did. I have had no bad results. Last winter I vaccinated over three thousand persons, who came to my office for vaccination, with not one bad result. Another point, and then I have done. There has something been said about enforcing public vaccination. We have, in the city of Detroit, enforced public vaccination to this extent, that no child can attend the public school that has not been vaccinated properly. There has been no trouble about it, and the people there conform to the regulation, which is enforced fully by the School Board in connection with the Board of Health. There has been no trouble whatever. I think the city of Detroit, enlightened as it is, — having received long instruction, before I went there, from its State Board of Health, which is one of the best in the country, — I think, as well instructed as the people are in the city of Detroit, if we undertook by law to compel everybody to be vaccinated, we should have opposition.

Dr. HILLIS, of Iowa. — And failure.

Dr. WIGHT. — And I suppose, Mr. President, we would have failure in many instances. I do not think, although I maintained the position once in the Board, and I wrote out an order in favor of enforced public vaccination, I do not think the time is quite ripe for it yet. We must teach the people, and I am afraid, in the present state and temper of public feeling and public enlightenment on the subject, if we were to enforce public vaccination everywhere, we should then organize into a dangerous opposition the opponents of vaccination. We had better leave them scattered and work on by persuasion as much as we can, crowding every inch of ground that we have, and crowding a little further. We had

better work on, and in this direction, for some time yet, than to undertake such a law as compelling public vaccination. I think all the people ought to be vaccinated. I know vaccination is a good thing. I know there is a pest-house in the city of Detroit, where the inmates had no protection but vaccination, and there was not one single instance of the disease; and I would defy all the anti-vaccinators on God's earth to put eleven persons not vaccinated in a pest-house, in the midst of thousands dying of the disease, and have them come out unscathed. I will put that fact against all the anti-vaccination statistics that have been or will ever be compiled.

Dr. BAILEY, of Kentucky. — Mr. President, in regard to compulsory vaccination I am inclined to think that, as sanitarians, it is our work to be educational in regard to the small-pox, as well as all other diseases. It is for the people's interest to be protected; so, as soon as we teach them thoroughly that they can be safely vaccinated, they will submit to it. There is something in the atmosphere of our republican government that creates a resistance whenever you come and tell a man he must do this or that; and, consequently, I think we should rely on moral suasion, and begin education. Secondly, in regard to whether we should use human or bovine virus. I think circumstances will largely determine this. It is scarcely possible where large numbers are to be vaccinated, and that almost immediately, at the breaking out of an epidemic, or on the apprehension of one, to get a sufficient amount of humanized virus to accomplish this. Then it can be done better with bovine virus, as stated already by another gentleman this evening. I think where a patient, or a well person, has been exposed to the disease it is safer to use humanized virus, because, in my hands at least, there is a period of incubation that attends the use of bovine virus when the patient is not protected; and during that period small-pox may develop itself, and bovine virus would not be able to protect for want of time. Third, in regard to the transmission of diseases by means of vaccination. I have not very much apprehension in regard to the transmission of syphilis, and other diseases, by the use of humanized virus; and yet it is claimed that diseases may be transmitted in this way, from both humanized and bovine virus. I beg leave to call your attention to one or two cases, and I beg of you not to hold me responsible for the truth of the first two, as I cannot furnish the papers, although they are on record. It seems that not only diseases may be transmitted, but other characteristics, by means of inoculation, or vaccination. It is said that a man threatened with death from anemia received blood from a ram, or sheep, and the characteristic transmitted was that before morning he had butted the headboard off his bed. The other one is, that under similar circumstances the patient found difficulty in obtaining blood to save his life, and a brawny Irishman bared his arm to the elbow, and generously furnished the life-sustaining fluid. This man was of a race that is now almost extinct, so well known to us in days gone by, — he was what was called an "Old Line Whig"; but after receiving this transfusion of blood it is

said that ever afterwards he spoke with an Irish brogue, and voted the Democratic ticket. The third, I am willing to be held responsible for, as indicating, perhaps, the possibility of transmission by bovine virus, as I vaccinated the boy myself, — I think, from a point received from Dr. Griffin's farm, — and after his vaccination his friends and acquaintances testified that he hooked everything that he could get his hands on.

Dr. RAYMOND, of New York. — Mr. President, I imagine that one difficulty which has met public vaccinators has been largely due to the fact that vaccination is spasmodic. I, as a member of this Association, would like to enter my protest against what I may denominate as spasmodic vaccination. Boards and public health officers are prone to wait until there is an alarm before they enter upon vaccination. The difficulties are these: in the first place, vaccinators are not known. You can readily imagine what would occur if a perfect stranger should present himself at your door, and state that he had come — even from the Board of Health — for the purpose of vaccinating you and your family; it is not likely that you would receive him with open arms. Now, sir, it is the experience in the large cities, where vaccinators are kept constantly on duty, that this difficulty is largely done away with. In my own city the vaccinator is known as familiarly as the alderman in his ward, and when he presents himself at a tenement-house he is received with as much confidence as any old friend of the family would be. When this system was first put into effect it was found, of course, difficult in going through a neighborhood where up to that time very few people had been vaccinated, and the public vaccinator found many who were not willing to permit their children to be vaccinated; but after the vaccinator would succeed in a single instance, in a large tenement-house, the other mothers would say, "We'll see how this takes"; and, if successful, when the vaccinator came around the following week he had no trouble in vaccinating every child in the house. In the city of Brooklyn to-day we have a constant system of vaccination, whether there is small-pox, or whether there is no small-pox. During the years when the city was entirely free from small-pox our vaccinators were constantly going around just the same as when small-pox was in our midst, and it is in this way only that our public health officers will be enabled to overcome the objections that the people have against vaccination; they would object to anything else, I don't care whether it be vaccination, or what it is, if you undertake to enforce it upon them in that way. They will not receive the vaccinator with open arms, and certainly not when he comes to vaccinate a child, and subject that child to all the dangers which common people think attaches to vaccination. I believe this subject of compulsory vaccination would never come up if the county health officers insisted upon a regularly organized corps of vaccinators to go from one house to another, irrespective of whether small-pox was present or absent. I was much struck with one paper read by the gentleman from Iowa, giving, as it did, local experience. We have, I think, been too much in the habit of quoting foreign authorities whenever we desire to

give weight to our arguments. We are apt to quote Seaton, or Simon, or some one who is out of our local jurisdiction. Now, there are very few people in our towns and cities who know these men. They possibly have heard of them, or more probably not, and it carries little or no weight. But when a man can come to the people of this locality and say, "Here is the experience we have had ourselves," that is the kind of an argument which I think will convince. I doubt not that in the town or city referred to in this paper the health authorities will have little or no difficulty in quieting any anti-vaccination excitement by local experience. In order to accomplish this object I commenced a year or more ago a system which is now kept in force in our city, and it is briefly this: every case of small-pox that occurs is visited by an inspector, — visited by an expert. He is instructed to make a thorough examination of the case in reference to vaccination marks, and the previous history of the patient, and report to his superiors every case of small-pox that has occurred in our city; and in this way we have a voucher, so to speak; we have a statement giving all these facts, and they have been of immense value in our public health service. Whenever we accumulate a number, fifty or a hundred, they are analyzed, and a summary is published; and when the people see, as they have seen from those records, that in the city of Brooklyn during the times of epidemic those who have been vaccinated rarely ever die, if they do contract the disease; whereas those who have never been vaccinated contract the disease and die in large numbers, — this local experience, I say, is very much more powerful than any quotation we might be able to make from foreign authorities. And I believe if the members of this Association, who are engaged in public health work, would keep records of this kind, we would not have one-half the opposition we now have on this subject of vaccination. On the subject of compulsory vaccination our experience in Brooklyn has been very similar to that of Dr. Wight. Of the school population I think there are more than ninety thousand. We have in addition to the State law, which prohibits any child from attending the public school that has not been vaccinated, a regulation of the Board of Education to the same effect. We are constantly, as health officers, sending from the schools children who have been admitted without the proper vaccination mark, for, unfortunately, the principal of the school is the judge, and he not being a medical man you can readily understand that children will find their way into the schools who have not the proper marks. But, by our constant supervision of the schools, we are enabled to accomplish a great deal. For instance, a short time ago one of our inspectors found a family of five German children unvaccinated; one of them attended the public school. The mother refused to have the child vaccinated. When the inspector came around and saw him he told the principal that the child must go home. The parent came the next morning, and wanted to know why the child was sent home; and rather than keep the child from school the mother allowed him to be vaccinated. It was successful. Then we vaccinated the other four without any difficulty. In this way, by con-

stantly following this thing up from point to point, it seems to me there never would be any necessity for compulsory vaccination, because there never would be any subjects for compulsory vaccination.

Dr. Samuel W. Abbott, of Massachusetts. — Mr. President, there are one or two points that I would like to speak of. I was pleased with Dr. Griffin's remarks, because they corroborate many things that I speak of in my paper. One thing, particularly, I wish to impress upon the Association, that I think it is necessary to do in order to insure perfect success, and that is the abandonment of all forms of virus which are not taken just at the proper maturity of the vesicle. The crust is taken several days afterwards, and of course there is liability during those several days of its being further contaminated with outside matter; and I think that almost all instances of injury may be traced to some source of this sort. Another point is that of spontaneous cow-pox. I know such cases are more frequent than has been admitted. Physicians are not in the habit of seeing cattle very much, particularly those who practise in cities, and those who practise vaccination. I have seen cattle in their usual condition, and the manner in which they are taken care of upon farms in the country. Some years ago I advertised in those journals, where I thought this matter would meet the eyes of the men I wished to see it, for cases of spontaneous cow-pox. I advertised in the farm journals in New England, requesting any farmers to notify me on the occurrence of cases of cow-pox among their cattle. I soon had notice from three separate counties in my own State of such cases, and I went and inspected those cases, and they certainly were cases of spontaneous cow-pox. In the first place, they had the appearance which is described by the later writers upon the subject; and, again, those cases were contagious, decidedly so. They were contagious in this way: the milkers of the cows communicated cases of cow-pox from one to another by their own hands. In instances where care was taken, in milking the herds, to milk those cows that were affected in that way last, the other animals escaped. Another point which goes to show that they were cases of cow-pox is this, — it is a matter of experiment with myself: I have seen cases of what are called spurious cow-pox, and I have no doubt they were not contagious and not communicable. But in almost every instance of this sort, where there was a case of this kind, I vaccinated those cows, not for the purpose of obtaining virus, for I never obtained virus from any such cow, because in every case I failed to get the vaccination to take, — I think it is very clearly evident that they were affected with cow-pox. And in regard to one or two instances I asked the owners of the cattle if there had been any cases of cow-pox in their herds, and they pointed out cows that they knew had had the disease two or three years before, and the traces of it had disappeared with the exception of small scars. I vaccinated those cows, and in no case did I get a single successful result. Mr. President, those are the reasons why I think that cases of spontaneous cow-pox are not of uncommon occurrence. It is a most difficult thing to communicate from such cases genuine bovine

disease to other cattle. I have tried to do it in many cases, and failed; I admit that.

Dr. HERRICK, of Louisiana. — Mr. President, I would like to ask the gentleman who has last spoken whether he has ever known a case of so-called spontaneous vaccinia except among milch cows, and while they were being milked? — that is to say, while they were giving milk; and whether it is not presumable that they have the disease communicated to them, in the process of milking, through the hands of the milkers?

Dr. ABBOTT. — Mr. President, that is exactly the fact. I never saw a case except in what is called a milch cow.

Dr. HERRICK. — Mr. President, I do not think I ever heard of a case that was not that of a milch cow. Now, I would like to ask whether it is not presumable that milch cows first get the disease from human beings; in other words, whether the disease did not originate among cows in this way, from the persons milking them?

Dr. ABBOTT. — Mr. President, the Doctor's point is very well taken. I can give you another instance that tends somewhat in this direction. In 1872, when I was attending a case of small-pox, — having at the time begun to take some interest in this matter. At that time I had a cow which I purchased for the purpose of vaccination, believing that it would be best to keep the animal until she calved; she was at that time about three months from the time of calving. In the month of January I purchased the cow. In February I was attending a case of small-pox. I had at that time an old overcoat which I wore while attending upon the small-pox cases, and which I used to leave in my stable, — this was a stable that had nothing to do with the general purposes of vaccination; but I kept the cow in that stable, and the coat usually hung up in there upon a nail. Some time afterwards — within two or three weeks after that time — that cow had an eruption, which I believed then, and now believe, was cow-pox.

Dr. HERRICK. — Mr. President, I would like to inquire if it was a general eruption?

Dr. ABBOTT. — Mr. President, yes, sir; though mostly about the udder. That eruption continued to go on without my doing anything with it. At the time the cow calved, in the month of April, some three months after that time, then having two animals, I vaccinated the cow and calf. In neither case was the vaccination successful, and I certainly believe that I know how to vaccinate a cow successfully. It is a very simple process if it is properly done, and it was thoroughly done in these instances, and it was not successful. My opinion is decidely at variance with that which has been prevalent among animal vaccinators — I know not why — that natural cow-pox is a rare disease, and the Beaugency and a few other cases are almost the only ones known to the present generation. On the contrary, I am disposed to give credence to the opinions of intelligent veterinarians, and also of milk-producers, whose experience is largely among the bovine race. They often tell me — I mean those men who are owners of herds of considerable size (twenty-five to one hun-

dred cattle), and whose experience extends over twenty years or more — that cow-pox has proved a serious annoyance to milkers at least once or twice within the past twenty years; and, what is in perfect accordance with Dr. Herrick's inquiry, these attacks have coincided in point of time with general epidemics of small-pox, as in 1871–2.

Dr. S. H. DURGIN, of Massachusetts. — Mr. President, I was very much interested in the paper presented by Dr. Hibbard, and in the discussion that has taken place on the subject of compulsory vaccination. I have had some experience in vaccination during the last sixteen years, which differs somewhat from that of the reader. I have been surprised and pained to hear the unfavorable experience of gentlemen who have spoken here in regard to compulsory vaccination. I am a firm believer in vaccination and revaccination. I also believe in using persuasion just as long as it will accomplish the purpose, and no longer. We must have wholesome laws to which we can resort when persuasion fails, and we must also have sanitary officers who believe in, and have the tact and courage to enforce, such laws. To suppress an epidemic of small-pox three things must be done: the patients must be isolated, disinfection must be thorough, and vaccination and revaccination must prevail. To prevent an epidemic the same means are required; but suppose a case of small-pox occurs in a tenement-house, where many other persons liable to take the disease have been exposed; the patient refuses to go to the hospital and the exposed persons decline to be vaccinated, — what are you to do? If your State law gives you no authority to remove patients and to compel vaccination, you are helpless. If you have the necessary law, and haven't the courage to enforce it, the situation is equally deplorable, and the cases go on multiplying until you have an epidemic. It has been more than intimated, in defence of Dr. Hibbard's paper that, with the high order of intelligence in Wayne County, public vaccination would fail, while it might succeed elsewhere. My experience is that the most intelligent people appreciate the necessity of vaccination, attend to it without compulsion, and aid materially in the enforcement of the law upon those who are careless or ignorant. We have in Massachusetts a law which authorizes our Boards of Health to cause the vaccination of every child before it attains the age of two years, and to revaccinate the inhabitants once in five years if it is deemed necessary. It authorizes us to remove small-pox patients to the hospital for isolation, and to use all other necessary means to prevent the spread of the disease; this includes the vaccination or revaccination of every person who has been in any degree exposed to the disease, or who lives in the immediate neighborhood of a case. Whoever refuses to be vaccinated under such circumstances is arrested, taken into court and convicted, and then the person invariably submits to vaccination, pays the cost of arrest, etc., and avoids the fine.

We rarely have occasion to resort to this process, but have never failed to convict the person and secure his vaccination. I should be very sorry to see opposition grow up among sanitarians, to a law which offers

us the best means to prevent the spread of small-pox, and which ought to be upon every statute-book. It works well in Massachusetts; we make use of it in Boston and have very little small-pox. I want to say a word in regard to the difference between bovine and humanized virus. I have used both forms, and I may say that in the last sixteen years, on emigrant vessels in quarantine, and in our city, I have used about all of the preparations of lymph, both bovine and humanized. As a result we have settled down to one preparation only, and that is the fresh animal virus on ivory points. Although I prefer the animal lymph, yet I have no prejudice against that which is humanized if it is judiciously selected. The fresh lymph from the arm is more likely to take on the first trial than the animal lymph, therefore, in the case of a person who has been exposed and needs the immediate effect of vaccination, I think there is a possible advantage in using the humanized lymph. If you need to vaccinate a very large number in a short space of time, as is often the case in quarantine as well as in the city, it is impossible to get the humanized soon enough, while the animal lymph can be secured immediately in very large quantities. For use in emergencies I should say that a supply from the humanized lymph would be impracticable.

The PRESIDENT. — The hour for adjournment has now arrived, and the Society will stand adjourned until this evening, at seven o'clock and thirty minutes.

EVENING SESSION.—7 O'CLOCK.

The PRESIDENT. — The Association will come to order.

The SECRETARY. — Mr. President, I am directed by the Executive Committee to announce the following gentlemen as recommended for active and associate membership in the Association. (See list of members elected.)

The PRESIDENT. — Gentlemen, you have heard the recommendation of the Executive Committee upon the candidates named. What is your pleasure in regard to them?

Dr. HUNT, of New Jersey. — Mr. President, I move that the Secretary be instructed to cast the ballot of this Association for the election of these gentlemen as active and associate members of this Association, as recommended by the Executive Committee.

The motion was agreed to. (See list of members elected.)

The SECRETARY. — Mr. President, I hold in my hand a ballot, bearing the names of the gentlemen recommended by the Executive Committee for election, respectively, as active and associate members of this Association, which, in accordance with the vote just taken, I cast for their election. I am directed by the Executive Committee also to announce that they recommend the acceptance of the invitation of the Belt Railroad Company to visit the Stock Yards at 9 o'clock to-morrow morning. The arrangement is for the departure of a train at 9 o'clock to-morrow for the accommodation of the members of this Association, and their friends. I have received, Mr. President, and am also directed to read, the follow-

ing report from the Committee upon the Treasurer's Report. (See Treasurer's Report.)

Dr. HUNT, of New Jersey. — Mr. President, I move the report be accepted.

The motion was agreed to.

Dr. GIHON, U.S.N. — Mr. President, I have a constitutional amendment which I would like to offer to this Association. It lays over one year I believe, under the rule, and is then taken up and discussed. I am not altogether satisfied it would be the best thing; but, in order to get the matter before the Association at its next meeting, I offer it now. It is as follows: —

All new members shall hereafter be elected to the associate class, and those desiring to become active members shall, upon the satisfactory establishment of their qualifications, certified to in writing by two active members and approved by the Executive Committee, be proposed to the Association for active membership.

The PRESIDENT. — By the constitutional provision, the amendment will lay over until next year. The next item of business is the paper on "The Influence of Immigration into the United States at Port Huron, Michigan, on the Public Health of the West and North-west," by Dr. Hiram R. Mills, of Port Huron, Michigan.

Dr. MILLS, of Michigan. — Mr. President, having been connected with the Inspection Service recently, and having been invited, since I came to the city, to give something of an outline of the work at Port Huron, and its influence on the public health of the West and North-west, I have hastily prepared the following paper, and beg your indulgence while I attempt to read my own handwriting, which is sometimes difficult.

Dr. Mills read his paper. (See p. 102.)

The PRESIDENT. — Dr. Mills' paper is now before the Association for discussion.

DISCUSSION.

Dr. DEVRON, of Louisiana. — Mr. President, as to the propriety of the measures taken, and the importance of vaccination, there is little or nothing more to be added, as the subject has already been fully discussed. There is one subject, however, that I have not heard mentioned, either in this paper or any other paper, in regard to small-pox, and that is the care to be given not only to the individual, but to his luggage. That subject ought to be brought up in the Sanitary Council, and be discussed by sanitarians of the local boards of Health, and of the National Board of Health, if continued. To vaccinate the individual protects him and those who are vaccinated; but if he has, during the voyage, been exposed, with his baggage, to the infection of small-pox, — cases on the ship, or at home, previous to his getting on the railroad, — what certainty have we then, that wherever that passenger lands, or makes his home, he will not make a nest of pestilence? That is one of the points that should be attended to. In the South it is required that yellow-fever patients, or individuals supposed to have been exposed to yellow-fever infection, shall be kept

long enough to satisfy the authorities that they have passed the period of incubation, and proper attention has been given to their baggage and the merchandise accompanying them, in order that they shall not transmit yellow fever. Small-pox is just as easily transmitted by clothing, baggage, etc., as yellow fever; and, if anything, more so. I do not think any measure, or set of measures, to prevent the propagation of small-pox in this country from importation will be sufficient, unless there is a thorough disinfection of the baggage, luggage, merchandise, and other goods, accompanying the individual. Not only must it be done on the landing, but on the cars, if it was not done properly and satisfactorily on shipboard. But even when it breaks out in the village at home, or in the hotels and hospitals in the country, wherever it may break out, proper care should be taken there also to disinfect the material used, or brought in contact with the individuals affected with this loathsome disease. For in that way, and in no other way, can we account for the bringing into the city of epidemics of small-pox, after the disease has apparently been stamped out. I have watched the disease during several years and epidemics, and my experience has always been that the disease, even when unprotected by vaccination, eventually seems to die out during the summer months, on account of the open doors and windows and the disinfection of pure air. When winter returns and the cold blasts come, compelling the windows and doors to be closed, and the old blankets of the previous winter to be used again, or the old blankets of the poorer classes to be taken from the junk-shops and used, then the disease springs up again; so that vaccination alone will not gain the credit it is entitled to, if measures for the vaccination of the public are not accompanied by measures for the thorough disinfection of everything that may progagate the disease.

Dr. HARRIS, of New York. — Mr. President, the difficulties which are experienced in dealing with the large number of emigrants, and the baggage that accompanies them, can scarcely be described. The duty at quarantine stations is to be performed according to the judgment of the officers there in charge; and we, sitting here, need to call upon them, and have our voices heard, urging them to be more and more watchful against the contagion that inheres in the baggage and in the tonnage that leaves the ship, or in the present great flow of immigration there will undoubtedly be distributed over the country a large amount of infected material. Last week it became my duty to go up two of the great trunk roads in the State of New York, and I saw for myself what the difficulties were in the way of two inspectors employed by the State Board of Health on those roads; and I found in every car — boarding three great trains — that the baggage stored in each of the passenger cars was in itself a stench, though these were usually clean passengers, — Swedes and Danes, etc., and many Norwegians, and also a very few speaking the English language. I found the two inspectors employed, one upon the Erie road and one upon the New York Central, could not finish the task in the something like the one hundred and forty miles they rode upon those

trains; each working as faithfully as he could, they could not finish before they reached the Buffalo Suspension Bridge. I saw the evidence of it; I saw, moreover, that this baggage was unsusceptible of thorough disinfection, which could not have been completed without detention longer than that which is practicable at the quarantine station at the port of New York. Now, much of that baggage in recent times, and for aught we know during the past year, has carried that infection to the distant States, to the interior communities. It becomes necessary, therefore, for all the States in which there is a sanitary organization, for the State and local organizations, to make and issue express instructions, which should be given every community, to be watchful, and to beware of the arrival of companies of foreign emigrants. In the city of New York we have been obliged to do this; the life of the Health Board extending only two and a half years, we have been obliged to give such information to the entire State, for in sixteen months small-pox has appeared in upwards of one hundred and fifty places; and in each case, let me bear testimony, the small-pox has been extinguished, excepting in the great cities next to the coast. In each case the small-pox that has appeared has been extinguished by vaccination and the thorough disinfection practised by the local Boards of Health. Now, in order to get at the proper care of infected baggage, we should have a Lands-end official to give information and instructions to the local Boards of Health, and they must act. They will find infected material at their very doors. It should not be so. It is high time that the civilization of the world demanded a secure and thorough disinfection of every piece of baggage that leaves a ship. We must insist upon that; we shall secure it; but the difficulties in the way are very great. Dr. Derby can bear testimony to the difficulty at Boston; and, let me say, four thousand emigrants land at the port of New York in a single day, and so the difficulties in the way of securing the detention that is necessary to insure the entire purification of the baggage accompanying them are many and very great.

The PRESIDENT. — If there is no further discussion on this paper the next business before the Association is the reading of a paper entitled "The Cremation of Household Refuse and Excreta," by Col. J. M. Keating, of Memphis, Tenn.

Col. Keating not being present his paper was read by Dr. A. N. Bell, of New York. (See page 150.)

The PRESIDENT. — Col. Keating's paper is now before the Association for discussion.

DISCUSSION.

The SECRETARY (Dr. Ames). — Mr. President, I dislike to let pass without a word of dissent a paper which enunciates as boldly as this paper does, and as earnestly, a proposition of this kind. I do not believe it is good practice for this Association to allow statements as strongly put as those are, which any of its members believe to be erroneous, to come in here, and go out, without at least a fair dissent being made, if such dissent exists in the minds of any. Such dissent does most strongly exist in

my mind. I do not believe the Almighty Maker of this universe intended anything to be wasted; and the process by which it is proposed to be wasted, permitting conservation only by the creation of volatile gases, and their ultimate elaboration into vegetation and food, is altogether too long to be called utilization. I believe a more direct way is intended for the saving such material. I do not like the idea of cremating things that are valuable. It may be allowable for us for a time, with our large resources and sparse population, to neglect that which older countries are being compelled to spend their waking hours in providing for, — the consideration of the question of how they can save this material. But, sooner or later, we shall pay the bill. General Grant, on returning to these shores, threw out in his speech at Galveston, Texas, a remark which to my mind expressed a great deal, for us sanitarians especially; and it did for all. In that speech he said: "On the worn soil and with the dense population of the Old World, it takes a great deal of government to enable a man even to get a living; whereas with our sparse population, and the fertile soil of our country, it requires very little government to enable a man to get a living."

But the day is coming, I believe, when we have got to consider all these things. That day is coming like the thief in the night. It is coming so rapidly, and so alarmingly, that we shall presently wake up to the fact that it is here, and that we ourselves have brought it upon us by our wilful destruction and waste. I belive all large riches and all large gains are to come from the accumulation of our savings; and I don't believe that we should let this principle get out of sight and out of mind.

Dr. WIGHT, of Michigan. — Mr. President, I do not rise to discuss the paper, but I wish to protest against one statement in it, which declares that Detroit, among other places, has a foul water-supply. There is no sewage in the water-supply of Detroit. It is taken from far above the city, and above any impurities in the river. The supply is taken from a river that runs nearly three miles an hour, and the sewage of the town is emptied into that stream below where we take the water-supply. The water analyzed is found to be among the best waters supplied to any city in the world. I might say several things in regard to this paper. I think it would be difficult to burn up many things that are found to be obnoxious in cities. If we were to stick to the combined sewer, and empty the sewage into the fire, I think it would require a great deal of blowing to keep the fire going; and I am afraid we would have to keep a good many things until they got dry, before they would burn; and in the meantime they would be a great source of nuisance and disease. I don't believe in keeping inside the town anything for any length of time, which would be obnoxious from a sanitary point of view. The old-fashionnd methods of drawing things away from a city implied that they should be kept for a while until it was convenient to remove it. For that reason I have always opposed, or at least have never encouraged, the odorless excavators, and things of that kind, because they imply the existence of cesspools and things of that kind; and of all the

foul things on this continent the very worst is a cesspool or vault. I think such an institution as that should be regarded not only as opposed to sanitation, and as deserving of moral reprehension, but the very existence of a cesspool or vault should imply that the owner thereof is a criminal engaged in the wholesale murder of his fellow-men. I did not get up to discuss this paper, or any issue raised by it, but only to correct a misstatement in regard to the Detroit water-supply.

Dr. DEVRON, of Louisiana. — Mr. President, besides the utter impracticability of burning this matter, there is one other thing: it would require a civil engineer to attend to each of those furnaces; and it would require a sanitary inspector to almost every house to see that the work was well done. And, besides that, he would have gases generated at the first start, the odor of which would be equal to that of any fertilizing factory in the land. I think the thing in itself is ridiculous.

Dr. RYAN, of Texas. — Mr. President, I was very much pleased when Dr. Ames spoke of the economical side of this question. I know there are cities in Europe where everything of this kind is kept and sold to the farmers. It is at first deodorized and sold to the farmers, and they say the sale of it more than pays the cost of saving it; besides this, it makes the farms more productive. Now, I am from the other side, — a good piece from where Dr. Ames lives. I live in the country that is called new; but there is no place but what is benefited by manure. I have known planters in slave times, on the rich plantations of the Red river, to get twenty bushels more corn the first year off that Red river land than they would get if they did not manure it, and it would be better afterwards. Now this is a great waste in my opinion. It is certainly a great waste. As a nation we are buying a large amount of fertilizing material, and the proper plan, it does seem to me, would be to economize this material — that it is proposed to burn up — and utilize it for fertilizing purposes, instead of sending large sums of money to foreign ports to buy fertilizers. In Japan the smallest amount of fertilizing stuff is saved, if it is no more than a thimbleful. I know the day is coming, as Dr. Ames says, it is rapidly coming, when we will need every particle of fertilizing substance that we can obtain.

Dr. BELL, of New York. — Mr. President, not to criticise, I think there is a misapprehension that may arise from another part of the paper. Much as I appreciate the danger of filling up the deep places between the bars with the deposits that occur from the sewers, I think all such things should be carried out to a point where they would be carried off by the current; but, as to this sewage poisoning the fishes, I think that is a mistake. The fishes thrive on it, and that portion of the sewage is rendered in this way back into its original elements. There is scarcely a boy in the city of New York who will not tell you that these sewer-mouths are the very best feeding-ground for cat-fish, and a great many kinds of fish better than cat-fish are caught in such places. This contradicts entirely the assertion that it poisons the fishes.

The Secretary (Dr. AMES). — Mr. President, it strikes me that my

friend from New York forgets that everybody doesn't live on deep tidal waters; and that it is a well-known fact that in fresh-water streams of not very much area it does not take a great while for the pollution to be such as to entirely destroy the fishes; and I will challenge my friend to produce one instance in which old sewage is placed before fish, where they are penned up, that it does not kill them; or where he can find them feeding on old organic matter. He can find them in some places feeding on fresh matter, but never on old.

Dr. BELL, of New York. — Mr. President, is it not fresh when it is discharged from the sewer?

Dr. PRATT, of Michigan. — Mr. President, there is no escape from the fact that it is certainly desirable to have no cesspools. I have always held it to be good economy and good sense to burn kitchen rubbish from day to day. It has been the rule at my house for twenty-six years. I did it for my own protection and for the protection of my neighbors. With the introduction of a system of sewerage my practice might change, but such has been my rule, and for the purpose I mention. I think, as I said before, in small towns, or in even country places outside of town where it is certainly not desirable to have a hog-pen or a cesspool, such a disposition can be made of the refuse very comfortably and conveniently, day by day.

The PRESIDENT. — If there is no further discussion on this paper we will listen to the next, which is a paper entitled "The Sanitary, Physical, and Educational Advantages of Open Areas in large Cities," by Dr. T. Newell, of Providence, R. I. Dr. Newell not being present, his paper will be read by Dr. Hunt.

Dr. Newell's paper was read by Dr. Hunt. (See page 155.)

The PRESIDENT. — Dr. Newell's paper is now before the Association for discussion.

DISCUSSION.

Mr. JAMES R. CROES, of New York. — Mr. President, the city of New York, some eight or ten years ago, purchased a district of thirteen thousand acres, equal in area to the whole of Manhattan Island. A topographical survey was made of the whole territory; and the laying out of a system of streets for the whole district was at once entrusted to the engineering corps department, with the assistance of Mr. Frederick Law Olmsted, as the landscape architect. A careful study of the whole territory was made, and there is now established by law a complete system of streets and avenues, and roads and parks, in that territory, in which the principals which are advocated in the paper just read have been thoroughly carried out. The streets are of varying widths, narrowing to sixty feet, and sometimes widening to two hundred. And there are small parks, and three or four quite large parks scattered through the area. It is the only instance that I am aware of in which so large a territory has been platted with so much care, and on so comprehensive a plan. That plan has been fixed by act of the Legislature, and cannot be changed except by the Legislature. The city government cannot change it. And all the improve-

ments that are carried out in that territory are carried out in accordance with that plan. It is entirely different in its features from the system which was adopted, in 1870, for the upper part of the city of New York. It presents a rugged surface, very diversified, and was a puzzle to the Commissioners for a long while, who were appointed to lay it out. In this annexed territory that I speak of the topography is very varied, and the streets are laid out so as to form areas, and there is hardly a rectangle in the streets. The main roads run north and south in a general direction, and the other streets, instead of crossing them at right-angles, are arranged so that the maximum building surface is obtained, with the minimum expense of grading.

Dr. GIHON, U.S.N. — Mr. President, Mr. Croes, I think, has forgotten to give credit to that most beautiful city of all the cities in the world, and certainly in the United States, — I mean the city of Washington. The city of Washington has more than half its area given to open space. It combines all the advantages of the rectangular plan, by its intersecting avenues, — wide avenues crossing rectangular streets, leaving large open spaces, which are called triangles, or circles, which are planted with trees and kept open; and, besides, the wide avenues or streets are planted with beautiful shade-trees. There are one hundred thousand trees now planted, and within a few years, when these trees have attained their full size and accomplished their chemical purpose in purifying that atmosphere, the air about which we have heard so much, and which is charged with malaria, and everything of that sort, will be purified, and the city of Washington will stand preëminently as the best-ventilated city in the world.

Dr. BELL, of New York. — Mr. President, I rise just to make one application which the paper suggests, for it brought to my mind a very prominent paper written by Dr. Van Bibber, of Baltimore, a few years ago, on the mischief of enclosing the back-yards of houses in high brick walls, — a practice nowhere more prevalent than in the finest part of New York city and Brooklyn. The yards are there enclosed by walls too high for any one to look over, penning up the stagnant air, as it were, in the back-yards of the houses for no purpose whatever. At this very time numerous grand mansions are going up in New York and Brooklyn, just of that kind. In some cases the newer principle has been adopted, and the mischief has been avoided.

Dr. DEVRON, of Louisiana. — Mr. President, alluding to certain portions of New York and Washington reminds me of the city of Savannah, which we visited last year, and which my friend Dr. Gihon has forgotten, although he got his wife there. That city deserves to be called the park city. The parks there surround the houses. If it were not so, that city would be uninhabitable, on account of the want of sanitary measures; its unimproved privy system, its sewer system, its location, and everything else, would render it uninhabitable, were it not on account of its magnificent parks, almost as numerous as its squares. That city is pleasant to live in in the summer, strange to say. A person walking through it

would imagine that a sanitarian had planned it; but that is not the case: it was planned by a military man, for the purposes of military tactics. But that city, to my mind, is the best-ventilated city in the world of its size.

Dr. GIHON, U.S.N. — Mr. President, allow me to suggest that no man exceeds me in admiration of the city of Savannah. It is a beautiful city; it has twenty-four parks in the space of one square mile, but it has not the advantage that Washington has in diagonal avenues. No matter from what direction the wind comes it has an uninterrupted sweep across the city of Washington. I think I must give Washington credit for being a better ventilated city than Savannah; but Savannah is a beautiful little jewel.

The PRESIDENT. — If there is no further discussion on this paper I have a communication, which I will read, from the Sanitary Council of the Mississippi Valley.

INDIANAPOLIS, Oct. 19, 1882.

SIR, — At a meeting of the Sanitary Council of the Mississippi Valley, held at the Grand Hotel in this city, October 19, A.M., a committee of one from each State represented in the Council was appointed to prepare an expression of opinion with regard to the work of the National Board of Health, and the necessity for its continuance; the said committee to report at an adjourned meeting which was held at 5.30 this P.M.

At this latter meeting the President, Dr. Devron in the chair, Dr. J. J. Speed, of Louisville, Ky., chairman of the committee, submitted the following: —

"*Resolved*, That the Sanitary Council of the Mississippi Valley earnestly deprecates any effort to curtail the work of the National Board of Health as likely to result in a renewal of panic and unnecessary interference with commerce and travel.

"*Resolved*, That, in the judgment of this Council, founded upon an intimate and extended experience, the river and rail inspections of the National Board of Health are essential to secure the confidence of the Mississippi Valley, and thus to prevent avoidable interruption and disturbance of business interests; and the Council, therefore, petitions Congress to give such aid to the National Board as will enable it to efficiently carry out its system of sanitary inspection for the prevention of the spread not only of yellow fever and small-pox, but of all epidemic contagions or infectious diseases.

"*Resolved*, That this Council fully endorses the action of the American Public Health Association, as set forth in the resolutions concerning the National Board of Health adopted at the session of the Association held October 18, 1882, and urges each organization represented in the Council to use its utmost endeavors to influence members of Congress from their respective districts to promote the necessary legislation to secure the end above indicated.

"*Resolved*, That the Secretary of the Council be instructed to transmit a copy of these resolutions to the American Public Health Association, and to each organization represented in the Council."

The above resolutions were unanimously adopted, after which the meeting adjourned.

Very respectfully,

JOHN H. RAUCH, *Secretary*.

R. C. KEDZIE, M.D.,
President American Public Health Association.

The SECRETARY. — Mr. President, I move that the communication lie upon the table.

The motion was agreed to.

The SECRETARY. — Now, Mr. President, I desire to offer the following resolution, and move its adoption: —

Resolved, That the American Public Health Association, just closing its Tenth Annual Meeting in the city of Indianapolis, and recognizing the agencies that have contributed to its very successful sessions, returns its most cordial and grateful thanks —

To the chairman and members of the Local Committee of Indianapolis, and its Sub-Committee on Transportation, for their zealous and constant endeavor to promote the largest and best results;

To the several Railroad Lines of the country which have extended facilities of transportation, especially those which, recognizing the value of the philanthropic work of the Association, have given free passes to its members;

To the Belt Line, for the special courtesies paid the Association in its excursion designed expressly for its entertainment;

To the Superintendent of the Indiana Institution for Educating the Deaf and Dumb; to the Board of State-House Commissioners, and to the Board of Trustees of the Indiana Hospital for the Insane, for their polite invitations to visit their respective institutions;

To the Press of this city, and especially to the *Indianapolis Journal*, for the able and cordial expressions of interest and support given the Association, and the full reports of its doings daily published in its columns;

To the Associated Press and its agents, for careful and generous despatches;

To the Western Union Telegraph Company, for its most highly appreciated and liberal service, so often before tendered this body;

To the Clergy of this city, for their participation in and support of the daily proceedings of the Association; and to His Excellency the Governor of the State, and His Honor the Mayor of the City, who so ably and acceptably presided over its evening deliberations and gave welcome to the Association;

To the several Hotels of the city, which have afforded reduced rates and hospitable attention to the members of the Association;

To Mr. E. H. Jenkins, the always attentive and obliging gentleman in charge of the hall of assembly; and to all the citizens of the city and State who by their influence and aid have contributed to the pleasure or effectiveness of this meeting.

Agreed to unanimously.

The PRESIDENT. — Gentlemen of the Association, I have now the honor of presenting to you the President of the Association for the year to come; and, in closing the exercises of this Association for this session, permit me to thank the members, one and all, for the kind and generous manner in which they have extended their forbearance to me in the exercise of my duty as chairman. I now have the pleasure of presenting to you your next President, Dr. E. M. Hunt, of New Jersey, to whom I resign the chair.

Dr. REEVES, of West Virginia. — Mr. President, one thing has been omitted, and I am very sure that what I am going to say is anticipated by every gentleman present, that is, we have omitted to return our thanks to the retiring President for his dignified and impartial adminis-

tration of the affairs of this Society; and therefore I move that the thanks of this Association be tendered to Professor Kedzie for the able and impartial manner in which he has discharged the duties of his office.

The President-elect, Dr. Hunt, of New Jersey, put the question upon the motion, which was carried unanimously.

Dr. REEVES, of West Virginia. — Mr. President, I now make the same motion in favor of our excellent Secretary, who has discharged the duties of his office with great faithfulness, and is deserving of an expression of thanks from us. I therefore move that the thanks of this Association be tendered to Dr. Ames, the Secretary of the Association.

The motion was unanimously agreed to.

Dr. REEVES, of West Virginia. — Mr. President, I think there is one other thing in this direction. The thanks of this Association are due to the Treasurer of this Society, Dr. Lindsley; and I therefore make a motion to that effect.

The motion was agreed to.

The SECRETARY. — Mr. President, I am directed by the Executive Committee to announce that, on information received of satisfactory character, they have transferred Dr. John N. Hurty, of Indianapolis, from the associate to the active class of membership in this Association.

The PRESIDENT (Dr. E. M. Hunt, of New Jersey). — Gentlemen: in taking the chair, in taking upon myself the duties which now devolve upon me, my first congratulations are to you (Prof. Kedzie), the retiring President of this Association. We had expected that a gentleman who has been used to presiding in high places, who has not for the first time found himself upon the platform, would preside over such an Association as this, with great propriety and with great excellence; and I feel that the gentleman who is retiring after having presided over so successful and pleasant a meeting of the Association as this is to be congratulated rather than my humble self, whom you have called, in your kind consideration, to occupy his place. As I look back upon the history of this Association for the past ten years I think congratulations may be added, also, as to the character of this assembly. It is true we have not been overwhelmed with numbers, as when in the midst of the yellow fever we met at New Orleans, in connection with great sanitary questions that related to that city; but I have to say, as has been said among the gentlemen present, that we have had no meeting which has been so strongly and so thoroughly characterized as this meeting. I think there have been present at Indianapolis more who have been, and who are at present, members of Boards of Health, and of those interested in sanitary matters in their respective localities, and a greater number from other States and other cities, than at any previous meeting. And we are certainly to be congratulated upon the character of the papers that have been introduced, and especially on account of the effort which was made upon the part of the Executive Committee, as they announced in the first paper issued by the Secretary in reference thereto, that an effort would be made to have this an interesting meeting of discussion; and I stand here conscious of so

great a personal benefit derived from attending these discussions that I can only say that the discussions of day before yesterday, and the discussions of yesterday, and the discussions of last evening, and the discussions which we have had here to-day, would be worthy any British sanitary association, or any sanitary association in the world. It is not, gentlemen, that we are a mutual-admiration society, that I say this; but it is because those who will read these papers, and those who will gather together the facts and information that have been received here in the past few days, will say the same thing; and I, in standing here to-day, never felt so humble in my life. I feel that I have been here sitting at the feet of men, at whose feet I am glad to sit, to hear their manifold experiences, and I have attended these meetings from year to year because I have felt that I know so little I could not afford to stay away. I congratulate you, also, upon meeting in this beautiful city of Indianapolis, — a city so healthy now, that sometimes I believe they feel they don't need very much sanitation here, although I remember that Dr. Drake, a great physician of Mississippi, who was born within six miles of my own home, in addressing his students on a certain occasion, said to them, "Gentlemen, settle anywhere in the West, except in the State of Indiana. In the State of Indiana there is a great deal of sickness and very little money." It is not so now, gentlemen; but there are cities, and there are places throughout all our wide land, where that is true, and where they do need our help. I can only say, as we part here to-night, in humble reliance upon the divine blessing, — in humble reliance upon that assistance which we shall receive from each other, — I trust that we may be spared to meet another year in the city of Detroit, there to rejoice in carrying forward this excellent work which has been so successfully carried forward heretofore by our predecessors. With these remarks I beg to thank you for the kind distinction that you have placed upon me in calling me to preside over so distinguished a body. If there is no further business before the Association, I now pronounce this Association adjourned, to meet at such date as shall be hereafter appointed, about one year hence, in the city of Detroit, Michigan.

REPORTS OF COMMITTEES.

PRESENTED AT TENTH ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, INDIANAPOLIS, IND., OCT. 17–20, 1882.

REPORT OF THE COMMITTEE ON NATIONAL MUSEUM OF HYGIENE.

In the performance of the duty with which your committee was charged, of conferring with the Surgeon-General of the Navy with respect to the establishment, at Washington, D.C., of a National Museum of Hygiene, under his auspices and with the coöperation of the American Public Health Association, for the illustration and dissemination of the principles and practical application of sanitary science for the protection of the public health, and of conveying the thanks of the Association to him for his offer of the National Museum of Hygiene, which he has established in the city of Washington, as a central depository of sanitary exhibits for the gratuitous use of the members of the American Public Health Association, and of advising him of its acceptance thereof, they have addressed the following letter to him: —

AMERICAN PUBLIC HEALTH ASSOCIATION,
COMMITTEE ON NATIONAL MUSEUM OF HYGIENE, Aug. 25, 1882.

PHILIP S. WALES, Esq., M.D., *Surgeon-General U.S. Navy,*
Chief of Bureau of Medicine and Surgery,
Navy Department, Washington, D.C.: —

SIR, — The undersigned have been commissioned by the American Public Health Association to advise you of its acceptance of your generous proffer of the facilities of the National Museum of Hygiene, which you have established in Washington, and to convey to you its earnest thanks for the timely service you have rendered it, and its appreciation of the interest you have manifested in, and the aid you have contributed to the cause of, sanitary science. A museum which shall illustrate, as you propose, the history and progress of hygiene, and acquaint the student and inquirer with sanitary appliances and improvements in food, water supply, and the other essentials of life, cannot fail to go far towards accomplishing the purposes for which this Association has been called into existence, in instructing the public in the requisites of health, as the foundation of domestic happiness and of the welfare and prosperity of society.

In the name of the Association we cordially wish you success in your under-

taking, and congratulate you on the official recognition and support it has received from Congress.

With assurances of our personal esteem, we have the honor to be,

Very respectfully, your obedient servants,

ALBERT L. GIHON, M.D.,
WILLIAM H. FORD, M.D.,
C. W. CHANCELLOR, M.D.

The action of the Association at Savannah was enthusiastically supplemented by the America Medical Association, at its thirty-first annual meeting at St. Paul, Minnesota, 8th June, 1882, which unanimously adopted the following resolution, reported to it from the Section on State Medicine: —

Resolved, That the American Medical Association heartily endorses and commends to Congress the proposition of the Surgeon-General of the Navy to establish at Washington, in connection with the Bureau of Medicine and Surgery of the Navy Department, and in coöperation with the American Public Health Association and the American Medical Association, a National Museum of Hygiene, which shall exhibit the history and progress of sanitary science, by a collection of publications, articles, models, drawings, etc., illustrating defects and improvements in foods, in water supply, bedding, clothing, in marine architecture, house and hospital construction and furniture, apparatus for heating, illumination, ventilation, and removal of excreta and refuse, culinary, laundry, and bath facilities, and for physical culture and exercise, and whatever else tends to the preservation of health and the prevention of disease.

Resolved, That this Association earnestly urges upon Congress the appropriation of the sum of $10,000, which has been recommended for the purchase of exhibits and their subsequent care and preservation, and that the permanent Secretary shall, without delay send a copy of these resolutions to each member of Congress.

The importance of the undertaking was promptly recognized by Congress in the appropriation of the preliminary sum of $7,500 for the rent of a building, the transportation of contributions, and the preparation of models, etc., illustrative of sanitary science.

The Surgeon-General of the Navy has accordingly issued a circular, hereto appended, announcing the establishment of the museum, explaining the scope of the enterprise, and soliciting contributions of articles, apparatus, models, drawings, etc., in illustration of every department of sanitary science.

The plan outlined is a very broad one, and its successful completion will depend upon the generous and interested coöperation of the sanitarians of the country. It is not proposed that the museum shall be a cabinet of curiosities, hidden behind glass cases, under lock and key. It is to be a working-place, where every student may see and handle, and its books are collected that they may be read by the greatest possible number. Four thousand volumes have been already accumulated, the intention being to make the collection of hygienic authorities as extensive and complete as can be done. An important adjunct of the museum

already in operation is its experimental Physiological Laboratory, for the investigation and demonstration of biological phenomena, in which apparatus of the value of over two thousand dollars have been purchased, and are available by any experimenter who may desire to engage in this research. . Analyses of foods, the study of the microscopic organisms of the atmosphere, and the examination of the ground air at various depths, are among the investigations now being conducted at this laboratory.

Your committee, therefore, beg to express the hope that each member of the Association will feel a personal interest in the success of the museum and library, and will manifest that interest by contributing, and inducing others to contribute, to their growth, and they suggest the establishment of a permanent committee, to be entitled "The Committee on National Museum of Hygiene," to be the medium of communication between the Surgeon-General of the Navy and the officers and members of the Association, and to be especially charged with the dissemination of information respecting the museum, and with the collection and transmission, in the name of the Association, of such contributions as it may desire to have deposited.

All which is respectfully submitted.

Albert L. Gihon, M.D., *Chairman.*
William H. Ford, M.D.
C. W. Chancellor, M.D.

REPORT OF THE COMMITTEE ON PREVENTION OF VENEREAL DISEASES.

Mr. President and Gentlemen of the Association: —

Your committee have to report, in compliance with your instructions to associate a legal adviser with themselves, for the further consideration of the draft of the Act submitted by them at the Ninth Annual Meeting of the Association at Savannah, Ga., 2d December, 1881, and to report, at the present meeting, that they were fortunate in securing the coöperation of Frank Wolfe, Esq., of Philadelphia, to whom they are indebted for the revised form in which they are able to present herewith the proposed Act to prevent the spread of contagious diseases.

During the past year your committee have made every effort, by means of circulars and through medical journals and other periodicals, to ascertain the popular sentiment as to the advisability of the contemplated legislation. The replies they have received have been, without exception, commendatory of their purpose; and this particularly where the danger of the infection of innocent women and children is for the first time fully comprehended.

Your committee, consequently, repeat what they have urged in

former reports, that the instruction of the community as to the existence, nature, and prevalence of venereal diseases is a necessary preliminary to successful legislation. They remind the Association, therefore, that it is its duty, as the conservator of the public health, to disseminate that information concerning them which the science of medicine has established as no longer contestable.

While the absolute degree of contamination of the community by venereal disease cannot be ascertained, the returns of the military and naval establishments of the United States and European nations, and of civil, charitable, and penal institutions and hospitals, enable a very accurate estimate to be made of the distribution of these diseases among the whole population. The following table, compiled from the latest official reports published, shows that a general average of one among every seven American, British, German, Austrian, and Italian soldiers and sailors was incapacitated for duty, during the year 1881, by diseases recorded as venereal; or, considering the sick exclusively, that more than one-seventh of all the cases of ill-health in these services, wounds and injuries included, have been venereal: —

Service.	Year.	Strength of force.	Total sick from all causes.	No. cases of venereal diseases.	Per 1,000.		Percentage of syphilis alone.
					Of strength.	Of sick.	
United States Navy	1881	9,546	9,483	868	90	92	40
United States Mercantile Marine	1881–82	. .	36,184	9,020	. .	249	63
United States Army — negro . .	1880–81	2,344	4,650	345	147	74	67
United States Army — white . .	1880–81	21,160	37,408	1,987	94	53	49
British Navy	1881	44,400	50,705	5,989	135	118	49
British Army	1880	83,895	75,173	20,623	245	274	51
North German Navy	1880–81	9,885	13,536	1,529	155	113	42
Austrian Navy	1880–81	7,664	7,919	867	113	109	49
Italian Navy	1877–78	12,364	7,539	1,752	142	232	49

Surprising and alarming as are these figures, which cannot be questioned, it must be understood that they do not include cases not severe enough to excuse from duty, cases surreptitiously treated by apothecaries, hospital stewards, nurses, and other unauthorized persons, and cases not specifically recorded as enthetic, but reported under other nosological titles, notwithstanding their venereal antecedence. While it may be alleged that the lack of social restraint among the exclusively male populations herein concerned is the explanation of this extensive pollution of their members, this is counterbalanced by the long periods of seclusion — especially of sailors — from female companionship; and, moreover, it is a fact established by official returns, that among the applicants for enlist-

ment, both in Great Britain and America, many of them youths under twenty-one, forty in every thousand have been found disqualified by these diseases before they have been subjected to the demoralizing influences supposed to be incident to the military and naval careers. While, therefore, a precise record of the number of cases of these diseases in civil life is not obtainable, these facts and the returns of dispensaries, asylums, and hospitals, which agree in authorizing the estimate of five private to every public case, leave no reason to doubt that the number of venereal cases in the United States approximates two millions.

The enormous proportions of this class of maladies would not, however, be sufficient reason for this Association to originate measures for their prevention, if they were confined in their primary or ultimate effects to the perpetrators of those offences against the moral law, which are popularly supposed to be their exclusive cause. Unfortunately they are not restricted in their consequences to the guilty individuals. The innocent and helpless members of the community are exposed to contamination by them; and it is in the interest of these classes, and of these alone, that your committee have framed the law they herewith propose. They wish it clearly understood, in this connection, that they have no concealed desire or purpose to add safeguards to prostitution, or to even indirectly extend the realm of immorality. Their sole object is to extinguish a class of diseases, which assail the pure as well as the impure, through unsuspected and unavoidable channels; to make it possible for a virtuous girl to marry without the risk of wedding a syphilitic, who will not only disease herself but cause her to bring into the world diseased offspring; and to defend the community against chance defilement by its numerous polluted members, who are now to be encountered everywhere, because there is no restriction upon their liberty, nor penalty for their communication of their loathsome affections. Your committee simply seek to place this restriction, under pain of exposure and punishment, upon the sufferers from these complaints, by requiring them to abstain from pursuits, resorts, and associations, through which they may by any possibility communicate their vile disorders to a single other human being. So long as it was supposed that impure sexual congress was the only means of infection inaction may have been pardonable; but now that it is established that the mucous patch and cutaneous syphilides are virulent sources of mediate contagion, the sanitarian would neglect a solemn duty who should hesitate to warn the public of their danger from bringing their own absorbent surfaces in contact with them or the secretions from them. That this danger is real is demonstrated by the instances of actual occurrence to be found in every medical periodical, and in the experience of every practitioner of medicine, of infection by drinking-vessels, pipes, pens, pencils, toys, instruments, mechanical apparatus, coins, towels, napkins, etc., which have passed from contaminated persons to others with abraded lips or fingers. It is not incredible that the Bible in the Justice's Court has endangered those, who have pressed its sacred cover most fervently and devoutly. The act of kissing has been more pro-

ductive of evil than any other, especially to those, who have been absolutely guiltless of wrong-doing. One such well-authenticated instance, as that of the modest young lady of eighteen, brought by her mother to Professor Chisholm to have an inflammation of the eye treated, who was discovered to have constitutional syphilis, readily traced to what she had supposed to be a fever blister, five months before, at the site of an existent induration of the lower lip, the outcome, perhaps, of a kiss, sufficiently demonstrates how easily this infection may be accomplished, and suggests how many other unknown victims have been similarly contaminated. One pertinent case reported since the above was written deserves especial mention, having occurred in the person of a "refined, cultivated, and lovely girl of fine family and social standing, and of immaculate virtue, who had a Hunterian chancre on the lip, with rupia, etc., contracted beyond all doubt by her having occasionally held in her mouth the handle of a paint-brush, which was in daily use by an artist, who is known conclusively to have himself had syphilis at that time." The opponents of the control of prostitution in any way who, in consequence of their inaction, become its tolerators in spite of themselves, and who, in their zeal lest that iniquity shall be bridled in its freedom by the law, oppose every attempt to protect even the innocent from its evil consequences, admit the prevalence of venereal diseases, but unconcernedly assert that they are no great matter after all, and that the terrible instances they can not gainsay are only occasional; but can the husbands and fathers of this Association look unconcernedly upon the pollution of even one virtuous wife or chaste daughter; and dare they, in the light of this age, refuse to make this perhaps only feeble effort to save one such from worse than death?

A poison so readily encountered and apt to entail the serious consequences so often seen, especially at hot springs and other cure resorts in Europe and America, ought to be guarded against in every possible way; and your committee are of opinion that the Act herewith submitted will go far towards accomplishing this result without offending the moral susceptibilities of any member of the community by a quasi-recognition or toleration of any form of immoral indulgence. It proposes to hold the male offender, who diseases, though only by kissing his wife, his betrothed, his mistress, or his lewd companion of the hour, to the same criminal accountability as the poor victim of his lust, who transmits the disease to other libertines. It makes that an opprobrium which is now looked upon by most men as a mere accident or misfortune, constituting it an offence against the law for its bearer to parade himself unconcernedly in public to the possible harm of innocent women and children. It cannot be claimed that its effect will be to foster prostitution, since recognized prostitutes have themselves instituted sanitary inspections in their own interest, and no longer need protection by legislation as an advertisement; but it does add a new danger to illicit intercourse in the risk of prosecution by public women, on charges, whether true or false, of having primarily diseased them. Though it may be ineffective in many cases, still it places

these affections in the category where they belong, of diseases dangerous to the public health, — public nuisances, — which, like small-pox, scarlet fever, and diphtheria, should not be allowed to menace the well-being of a single innocent, defenceless member of the community.

Your committee, with this object, in the hope that the experiment will be tried, and in the belief that it will bear good fruit, present this Act to the Association, and couple with it the request that it be placed, with the approval of this Association, before every legislative body and sanitary organization in the United States.

The late President of the British Medical Association, Benjamin Barrow, Esq., F.R.C.S., in a letter dated 15th August, says of it: "The Act is short and apt. It only requires, I think, one word to make it complete, and that word is *infectious*. People will make a distinction between infectious and contagious, and to my mind one is as bad as the other." The suggestion has been acted upon, notwithstanding the wider significance of the latter word, in this country, might be considered comprehensive of all communicable disease contemplated. Other minor changes, chiefly verbal, have been made in the Act, in deference to responses to your committee's invitation.

AN ACT

ENTITLED "AN ACT TO PREVENT THE SPREAD OF CONTAGIOUS AND INFECTIOUS DISEASES."

ARTICLE I. *Be it enacted by the* [Senate and House of Representatives of the State of], —

That any person within the jurisdiction of the State [or Territory], who shall knowingly communicate, or be instrumental in communicating, directly or indirectly, any contagious or infectious disease, such as small-pox, scarlet fever, or venereal disease, shall be guilty of a misdemeanor, and subject upon conviction in any court having cognizance of misdemeanor [where the offence may have been committed] [in the State or Territory], to the punishment of six months' imprisonment in the [County Jail].

ART. II. That if any person being the owner, agent, or occupant of any house, room, or place within the jurisdiction of this State [or Territory], shall have reasonable cause to believe any person located permanently or temporarily therein to be affected with a contagious or infectious disease; and shall fail to make such fact known to the proper health authorities [or if there be no such officials, to the nearest magistrate having jurisdiction of misdemeanor], he or she shall be deemed guilty of a misdemeanor, and upon conviction in any court having jurisdiction of misdemeanors [where the offender may reside or the offence have been committed] shall be liable to a penalty not exceeding [five hundred] dollars or to imprisonment not exceeding six months, or to both.

ART. III. That the State Board of Health, with the approval of the Governor, and the Health Board of the City of with the approval of the Mayor of said City, shall have power to institute and carry out all suitable measures to prevent the spread of diseases of a contagious or infectious character, and may, if deemed advisable, remove to proper hospitals, selected by

them, all persons suffering from contagious or infectious diseases, who, neglecting proper precautions, imperil the health of the community.

ART. IV. That this Act shall go into effect from and after the day of A. D.

All which is respectfully submitted.

ALBERT L. GIHON, M.D., *Chairman.*
JAMES M. KELLER, M.D.,
GEORGE M. STERNBERG, M.D.,
D. C. HOLLIDAY, M.D.,
PRESTON H. BAILHACHE, M.D.,
JOHN MORRIS, M.D.,
FRANK WOLFE,
Committee on Prevention of Venereal Diseases.

MINORITY REPORT OF THE COMMITTEE ON PREVENTION OF VENEREAL DISEASES.

MR. PRESIDENT AND GENTLEMEN OF THE ASSOCIATION:—

It would give me pleasure to agree with my colleagues on the committee, in their conclusion and recommendations; but I cannot, for the reason that the first two sections of the Act proposed by them for the approval of the Association appear to me to be impracticable, and the third section dangerous.

The doubts which I feel as to the wisdom of the committee's action may be stated in the form of questions, rather than of direct assertion or argument. It will be observed that these questions relate not to the nature and extent of the evil under discussion, but to the efficacy of the remedies suggested. The question at issue is not one of social pathology, but of social therapeutics. It will be observed, further, that the project of a law submitted by the committee, when analyzed, appears to have two distinct ends in view. In the first two sections the end sought is the punishment of persons who knowingly communicate the syphilitic virus, while the third section empowers local Boards of Health to take steps for the prevention of infection and the suppression of the venereal disease. There can, I think, be no legal, moral, or social objection to making the wilful communication of contagion a punishable offence, except the objection to incumbering our statute books with laws which are inoperative in themselves and not likely to be enforced. Whatever danger lurks in the action of the majority of this committee will be found in the third section of their proposed act.

I ask, first, whether the relations which exist between the sexes are not the fundamental fact of human life and of social organization? Do they not determine all human laws, customs, and manners, as the skeleton

determines the shape of the human body? Since all sexual contact must occur either within or without the pale of marriage, is there not an inevitable opposition between marriage and licentiousness? And does not every usage or law which encourages licentiousness tend to impair the sanctity of marriage? Is it not, therefore, incumbent upon every man who proposes any legislation whatever upon the relations of the sexes to show that the legislation proposed by him tends to discourage licentiousness and to protect the institution of marriage, — an institution which lies at the base of our modern civilization and progress?

Second, Is it possible to prevent the spread of the venereal disease by law, except by the seclusion of infected persons from sexual contact, or to enforce such seclusion without inspection, or to secure inspection without registration?

Third, Does not the registration of public women involve a radical change in the attitude of the criminal law toward the offence of prostitution, which is now contrary to law, but would, under any system of registration, be under the protection of the law? And what would be the effect of such a change upon public morals, upon marriage, and consequently upon society?

Fourth, Would it be expedient or safe to entrust to local Boards of Health the unrestricted power to "institute and carry out all suitable measures" to prevent the spread of the venereal disease, without knowing what measures they may regard as "suitable"? What would prevent them, in that case, from establishing a complete system of registration of prostitutes? And does the omission, from the proposed project of a law, of all the direct mention of registration, render the grant of power in this direction any the less complete and absolute?

Fifth, Will the mere threat of imprisonment, if the penalty prescribed in the law is not enforced, deter infected men or women from spreading the contagion? And can the penalty be enforced without prosecution and proof? Under this act is there reason to believe that prosecutions will become the rule, or that they will be rare and exceptional; and will it be possible to furnish the proof necessary in order to conviction, especially in view of the fact that it will be essential to prove guilty knowledge on the part of the person accused?

The doubts which I have expressed, and which are shared by very many in the medical profession as well as out of it, do not spring from moral or religious prejudice, but from considerations of law and of social science. Some years ago the experiment of registration of public women was tried in the city of St. Louis, where it created a tempest of excitement. The medical profession was found to be divided in sentiment as to the efficacy of registration from a purely sanitary point of view; and, at last, the Missouri State Legislature interfered and suppressed the undertaking. I cannot believe that public opinion has been educated to the point of accepting any system of registration; and the approval by this Association of a proposal to confer power upon local Boards of Health in cities to adopt and enforce such a system, without previous

discussion of the details of the system in our State Legislatures, might injure the Association in the estimation of many whose confidence and support are important to the success of its labors in other directions. Fear of popular disapproval should not deter us, certainly, from doing any duty which may devolve upon us; but, before taking a step which involves such far-reaching possible results, it is desirable that the question of registration should be discussed in its legal as well as in its medical aspects, to which due attention does not appear to me to have been given in the report of the majority.

Nor is it necessary, because one appreciates the magnitude of a social evil, to second any effort made for its suppression, even though such effort does not commend itself to one's judgment, on the ground that we have no other and better remedy to offer. In law, as in medicine, when one does not know what to do, it is sometimes judicious to do nothing. We may accept as true pretty much all that the majority of the committee has said as to the prevalence of syphilis, its malignant influence and the peril of infection, without perceiving the connection between their premises and their conclusion; just as we might admit all that could be said respecting the ravages of yellow-fever, and yet doubt the efficacy of heroic remedies in putting a stop to its diffusion.

In conclusion, I must express the most perfect confidence in and respect for the motives of gentlemen who advocate legislation for the suppression of a disease which can only be regarded in the light of a national calamity; and ask for myself a like charitable consideration, if I venture to differ with them in opinion.

Respectfully submitted,

Fred. H. Wines.

REPORT OF THE COMMITTEE ON THE MANAGEMENT OF EPIDEMICS.

Pensacola, Florida, 17th Oct., 1882.

Dr. Azel Ames, Jr.,

Secretary American Public Health Association:—

Dear Sir,—The pressure of exacting and unremitting duties, assumed at the request of the Board of Health of this port, has been so great for some weeks past that it has been utterly impossible to prepare the report, which it has been my purpose to present to the Association, on behalf of the Committee on the Management of Epidemics. The subject is one of such importance, and so especially interesting to myself, that I deeply regret the occurrence of the unforeseen hindrance which prevents my attendance upon the meeting of the Association, and renders a written report impracticable.

The experience of the present epidemic in Pensacola would furnish some very valuable suggestions upon the subject, especially as it is the first instance that has ever fallen under my own observation of the assumption and performance, by a statutory Board of Health, of measures of relief generally relegated to voluntary benevolent associations.

After having twice failed to report, and having twice been accorded further time by the indulgence of the Association, I scarcely feel at liberty to renew the request. I hope, however, that the unforeseen and providential circumstances which have caused the present failure will relieve the committee — or rather its chairman, upon whom the duty of preparing the report was devolved — from any imputation of wilful neglect. If it should be the pleasure of the Association to continue the committee, I will still continue the effort to perform the duty, or, at least, to take part in its performance. If the committee be discontinued, or the subject intrusted to other hands, I shall be not the less interested in it.

Meantime I am happy to be able to submit herewith a valuable paper from the Hon. John Eaton, a member of the committee on certain subjects closely allied to that, more especially entrusted to us, whether directly appertaining to it or not. Be pleased to present this paper to the Association for that consideration which, I trust, its intrinsic merit will secure for it.

Very truly and respectfully yours,

W. T. WALTHALL,
Chairman of Committee.

WASHINGTON, D.C., September 19, 1882.

My dear Sir: — Your letter of the 2d inst. has been awaiting my return to the city. I am afraid that the many matters pressing on my attention will prevent me from giving the subject of "Management of Epidemics" as much time as its importance deserves. I assume that you have obtained from the medical gentlemen of our committee all needful suggestions as to the sanitary and medical arrangements to be made, the precautions to be taken, and the preventive measures to be pursued. I shall, therefore, confine the few sentences I send you to subjects outside of these limits.

1. I think sanitarians on this subject, as on others of public interest, should endeavor constantly to keep the public press, and, through it, the public, informed as to the causes, probabilities, effects, and treatment of epidemics to which their communities are or may be liable. Some knowledge of the preventive precautions to be used; some belief in the propriety and necessity of taking those precautions; some patience under unavoidable inspections and intrusions of health-officials into the households and private arrangements of families, will result from the reiterated mention of these matters in the newspapers which the people read every day. Forethought about preventable matters, courage about the inevitable, and mutual help in either contingency, will be found invaluable in the time of danger. All other suitable methods of cultivating and fostering in the community this high moral attitude and ready self-devotion should be used in their proper time and way.

2. Quarantine, vaccination, isolation, and other preparatory and precautionary arrangements, should be provided for by law and public action beforehand. The influence of wisely framed law and ordinance, widely known and understood, is

very great, and each thinking member of the community should know that his city, town, county, and state is alive to the possibilities of epidemic disease, and possesses the means for combating it to the best advantage.

3. Each closely settled community, and especially every large town and city, should, every year, expend some money in training carefully selected persons among its residents as nurses, and minor health officers. The services of trained nurses in hospitals, private families, and in time of war, are well known and acknowledged. Very few can say how much a well-trained, calm, cheerful, and courageous company of nurses may be able to accomplish in an epidemic. In addition to attending the sick their vigilance will be found of immense use in detecting, reporting, and even correcting, unsanitary matters, great and small. They should be organized and registered, and wear some distinctive badge or uniform when on duty during epidemics.

4. Boards of Health — local, State, and national — are essential to the full and perfect management of epidemics and their causes in the civil economy of our country; believing, as I do, that every lawful community of human beings has definite duties to perform for the physical, mental, and moral well-being of its members which it cannot overlook, mistake, or neglect without present or future loss or suffering. I must emphasize this point all the more at this time when the representatives of the people and the senators of the federation have crippled the efficiency and stopped the labors of the National Board of Health. Happily the refusal or neglect of Congress cannot destroy the informing and vital purpose from which the American Public Health Association arose, and on account of which the National Board of Health was established. We must work the harder and more vigilantly on account of this loss.

5. The exchange and diffusion of information on these subjects should be a particular object and duty of sanitarians, health officers, and Boards of Health. The experience of one time and place should be communicated to other places for use at other times. It is only thus that we can overcome the opposition of many well-meaning but bigoted persons. As I have been dictating the contents of this letter I see in one morning paper, brought to my desk, the announcement of a proposed convention of anti-vaccinationists, and in a German paper received by the same post an abstract of an address before an association of teachers of the blind, in which loss of vision from small-pox at the present time is computed at two per cent., as against thirty-five per cent. in the period before Jenner's discovery; if a full understanding of what careful vaccination has done for mankind were general, could such a convention be possible, or could such a wonderful improvement remain disregarded? The same address contains the statement that fifteen thousand of the thirty-seven thousand blind persons in Germany might have their vision restored or improved if subjected, at the proper time, to suitable treatment; if the public really comprehended the powers and resources of modern surgery, would not the ranks of the blind be diminished by this forty per cent. of curable cases?

A steady publication and exchange of material between localities, states, and nations, would, in a short time, enable all to possess valuable data on which to proceed in the future. Comparatively small sums of money would suffice here and there for the prosecution of chemical and microscopical researches, and for experiments in the cultivation and inoculation of virus, parallel to, but not identical with, the labors of the eminent Pasteur.

6. I cannot but regret, as an educator, that the schools of the land do not pay more attention to the laws of health and public hygiene, as subjects of instruction. The care of the person receives some attention, it is true, but the rest of the subject is neglected in most quarters. Schools of domestic economy, lecture courses on the construction of houses, drainage, ventilation, furniture, occupations, and, other topics, and other means for general enlightenment, must be vigorously used,

and the public schools must bring the whole subjects to the firesides of the people.

Most of the foregoing remarks relate to the preparation and information of our communities as to the preventability of epidemic and other diseases. I consider this point to be one of the very greatest importance, without which, indeed, all other efforts in hygiene will be temporary, and in great measure wasteful and unsatisfactory.

I am, dear sir, very respectfully and truly yours,

JOHN EATON, *Commissioner.*

Major W. T. WALTHALL,
Biloxi, Miss.

REPORT OF THE COMMITTEE ON VITAL STATISTICS AND A UNIFORM SYSTEM OF REGISTRATION.

Mr. PRESIDENT AND GENTLEMEN OF THE ASSOCIATION: —

The report which was adopted by the Association last year expressed the wishes of its members by the following resolutions: —

Preamble and resolutions relating to completeness and uniformity of records of births, deaths, and marriages, and concerning coördination of efforts and laws to secure this result: —

WHEREAS, The American Public Health Association, recognizing the fact that a correct knowledge and use of vital statistics, and especially of the records of mortality and disease, are essential to the science and duties of public hygiene; therefore,

Resolved, That this Association fully concurs in the recommendations which have been made at several sessions of the American Association for the Promotion of Science, and at successive annual meetings of the American Public Health Association.

Resolved, That the report and papers herewith submitted from the Committee on Vital Statistics be referred to said committee, to revise and suitably present to the 47th National Congress at an early period of its first session.

Resolved, That the National Board of Health is hereby requested to coöperate and lead in the effort to secure uniform results in registration of births, deaths, and marriages throughout the nation; and that said Board is earnestly requested to procure such action of the National Congress and the adoption of such methods and regulations in all departments of the military, naval, and civil service, as should be enforced by national laws and regulations.

Resolved, That accurate and faithful registration of deaths and the causes of deaths should be enforced in every State and Territory under suitable statutes, by local and State Boards of Health, or, at least, under the immediate supervision of such Boards.

Resolved, That by whatever methods the most complete and perfect registration may be secured in the respective States, the results of such registration should present the vital statistics of the people complete and readily comparable under each and all branches, that such uniformity of results may constitute the uniformity of system which this Association asks for in the name of the States and the nation.

Resolved, That the several State Boards of Health are respectfully urged to do whatever they can to promote the completeness and uniformity of registration in vital statistics of the respective States, and that in order to promote their effectual coöperation copies of this report be placed in the hands of each of the State Boards of Health, and also be transmitted to each of the Governors of the States and Territories.

Resolved, That the American Public Health Association's Committee on Registration and Vital Statistics is hereby directed to continue its duties under the Association, and to coöperate with the National Board of Health as opportunity is afforded to promote the desired action of the State and National Legislatures and of the Boards of Health.

The resolution offered (by Hon. Mr. Brooks) on the second day of the meeting makes the eighth one relating to this subject. It is as follows:—

Resolved, That the Executive Committee of this Association is hereby instructed to memorialize, in the name of this Association, the Congress of the United States in favor of such legislation as will bring about a proper coöperation between the General Government of the United States and the several State Governments for a uniform and efficient system of the registry of the marriages, births, and deaths, of the population.

With these utterances of the Association thus recorded the Committee on Vital Statistics may rest assured that the duty of public registration of deaths, births, and marriages, and the supervision of vital statistics by local and State authorities, are henceforth to be urged and made effectual throughout the United States. The details of plans and methods, the amendments of laws and the complete organization of ways and means of supervision by sanitary authority, are now engaging the attention of the State Boards and hundreds of local Boards of Health, as well as of this Association's committee.

The time has come for beginning to organize the national system of vital statistics, and as this system must be evolved from the perfected registry in such of the thirty-eight States as may now give the most perfect and practicable examples, and such aid as the National Government shall offer for the encouragement and facilitating of complete registration, this committee will continually urge the importance of such perfect examples in all the States which have adequate laws, and can adopt suitable methods. The National Government will not much longer delay the aid of such examples and facilities as only the federal authority can give, especially such as a requirement for complete registry of vital statistics in the Army and Navy, and the Civil Service Departments, the free postage on all written and printed returns of deaths, births, and marriages, and the records of diseases by official hands.

The National Board of Health seems to have taken its preliminary steps prudently in its share of this work, and it is hoped that it will secure a national edition of the classified nomenclature of diseases as soon as the revised edition is issued by the Royal College of Physicians in England; for by that revised nomenclature all English-speaking peoples will

doubtless abide. Yet the statistical nomenclature of causes of death, as derived from that revised nosological nomenclature, will be a separate or special study or matter of agreement, and it now appears to be best to adopt and follow the best example you find in the American States, which shall sufficiently harmonize with the statistical nomenclature of registration in England.

The American Public Health Association is fully in accord with the opinion which Dr. Wm. FARR, of the English Registry Office, expressed to one of its members in 1875, when he said: —

> The whole world feels an interest in accurate returns of the births, deaths, and marriages, in the United States. By obtaining an *accurate record* of births (with age of parents), marriages (with age), and of deaths (with causes), you will confer the greatest benefit on your country.

The Association is now in a position to aid the respective State officials in the effort required for securing complete and thoroughly correct registry of vital statistics, and, at the same time, aiding the National Board of Health in all the worthy efforts in which it shall lead to secure the needed congressional action, and the desired nationalizing, by which a uniform system of vital statistics shall be secured for the whole Republic.

The committee may best express the judgment of this Association by submitting the following propositions, and the promise to advise and assist in giving practical effect to the same: —

First. — *Numerically and statistically complete* records of death must be registered by every State, and they should be primarily registered in such *local civil divisions* as are best adapted to the perfect administration of the registry duties; and all experience proves that it is important to have such local registration, coextensive and conterminous with the area of local sanitary administration, if local sanitary government is well organized.

Second. — Precision and completeness in the forms of record, as well as numerical completeness, must be provided for and insisted upon.

Third. — The means and requirements for securing entire *accuracy* by proper *attestation* or *verification* are of primary importance, and, therefore, should be provided for in every State by law, so that even in the absence of professional persons of whom such a duty is required, there shall nevertheless be suitable evidence recorded and attested in the certificates.

Fourth. — As an official record of burial, or of transit to a specified place or State for burial, is an essential means for securing an attested certificate and record of death, such burial record, based upon the official permit, issued only upon a lawful certificate of the death, such permits must be required and provided for in every State.

Fifth. — The official review of the records of mortality is necessary in each of the official areas of sanitary administration, also in sub-districts, as well as in counties and the State. To obtain and preserve these records in most suitable forms for the best analysis and study of

them is so important that this Association and the National Board of Health, as well as each State Board, should carefully study and offer the proper plans, and some coöperative assistance. [The chairman of this committee is prepared to submit for consideration of his colleagues, and all concerned, the outlines of a plan and methods to attain the ends here mentioned. These outlines are in accord with reports and forms which were presented in supplements Nos. 5 and 9 of the *National Board of Health Bulletin*, and they present important details that should be carefully considered and passed upon by expert and experienced registry and sanitary officers in conference, as proposed in the resolution which follows these propositions. The most useful and convenient methods of study and analysis of registered records of mortality, in limited districts as well as upon larger areas of sanitary administration, need to be presented and agreed upon.]

Sixth. — That uniformity in the practical results of any system of vital statistics now possible in the several States will require the coöperation and occasional conference of the expert registry officers who will influence this branch of public service in the respective States. Therefore the following resolution is offered for consideration and action of the Association, in connection with these six propositions: —

Resolved, That the American Public Health Association recommends that the chief officer and expert adviser in the Registry of Vital Statistics in respective States, and the three departments of the Federal Government, and in the National Board of Health, shall meet in conference, at a convenient place during the ensuing six months, to examine and consider the outlines of laws, plans, and methods for securing the most complete and correct registration and public uses of vital statistics in the several States throughout the nation, and in all branches of the public service.

LETTER OF THE COMMITTEE ON COMPULSORY VACCINATION.

New York, 15 E. 42d st., 14th October, '82.

Dear Doctor: — I now find that it will be impossible for me to be present at the forthcoming session of the American Public Health Association, and write to inform you that, owing to impaired health, much professional work, and absence from home, I am not prepared to make my expected report on "Compulsory Vaccination." For above reasons I did not ask the coöperation of the committee appointed to aid in making the report.

Would here say that I do not now think the time ripe for compulsory vaccination, and believe that the desired end can be to a great extent gained by indirect measures. These measures should be properly and promptly utilized; and whilst regretting that it has been impossible for

me to accomplish more in the past, and still more sorrowful that I cannot now see my way clear during the next twelve months to give the subject that attention its importance demands, would ask that I be released, and some one appointed in my stead.

Very respectfully yours, etc.

JAS. H. LETCHER.

AZEL AMES, JR., *Sec'y Amer. Pub. Health Association, Indianapolis, Ind.*

REPORT OF THE COMMITTEE ON NECROLOGY.

TO THE PRESIDENT AND MEMBERS OF THE ASSOCIATION: —

The Committee on Necrology begs leave to submit the following as its report upon the dead of the year. For the first time we chronicle the death of a past President of the Association, an original member of it, and one whose memory must ever remain dear to all who knew him. Dr. CHARLES BRAMAN WHITE, A.M., ninth President of this Association, died at his home in New Orleans, La., Sunday, April 16, 1882, of hemorrhage of the lungs, at the age of fifty-six.

Dr. White was born at Thetford, Vt., Feb. 14, 1826, and, after a fifteen years' residence in the State of New York, removed to Indiana, his father at that time assuming the presidency of Wabash College, at which Dr. White graduated in the class of 1846. Removing to Alabama, in 1848, he began the study of medicine, and going to New Orleans, in 1850, to further pursue his studies, graduated from the medical department of the University of Louisiana in 1852, and thereafter was engaged in the active practice of his profession in that city.

Dr. White, during the late war, was surgeon of United States Volunteers, and held the position of Medical Director of the Thirteenth Army Corps. From this connection arose that deep interest in sanitary matters which, in its later development, has made his name prominent in all sanitary circles, and given his high rank as a sanitary authority.

In 1868 Dr. White was made president of the State Board of Health of Louisiana, and it was in this position, which he held for seven years, that his executive ability and wise and prudent administration of the sanitary affairs of New Orleans and the State was exhibited. The reports of this Board during the term of Dr. White's incumbency are valued contributions to sanitary science.

Dr. White was a ready, delightful, and most logical writer, and any of his writings, picked at random, indicate the earnest, scholarly, conscientious, and painstaking character of the man. Of wide general information and extensive special acquirements, he exhausted any subject

upon which he entered, and his inquiries into particular lines were so marked by calm, dispassionate reasoning, and a deep, truth-seeking penetration, that the conclusions he arrived at carried conviction and had the weight of authority. He spoke several languages, was a fine microscopist, and a sound and most accomplished physician.

In 1876 Dr. White served as a member of the medical and sanitary groups of the Board of Judges of the Centennial Exhibition, and was called into consultation as an authority on yellow fever by His Majesty Dom Pedro II., the Emperor of Brazil, then visiting this country.

Dr. White was made Sanitary Director of the New Orleans Auxiliary Sanitary Association in 1878, in which responsible position he very largely added to his contributions to the welfare of the city, and of science in general.

He was, as has been said, an original member of this Association, always present at its meetings from the beginning, a member of its Executive Committee from the first; and his wise counsel, geniality, and strong sense have contributed greatly to the successful history of the Association.

In the fall of 1880 the Association met in the city of New Orleans, and, though then confined to his room by the disease which had shadowed his life for thirty years, he was elected by a most flattering vote to the presidency of the Association. Though the sad impression prevailed that it was gravely doubtful if Dr. White would live out the year of his incumbency, the honor was unhesitatingly bestowed, from the deep sense of his worthiness and desert, the Association's recognition of its obligations to him, and the universal regard and love in which he was held. The responsibility placed upon him seemed, however, to give him a new lease of life, and his administration was marked by the same wise and vigorous attention which all trusts received at his hands. He presided with accustomed ability over the ninth annual session at Savannah, Ga., and his address was replete with the wit and wisdom which always characterized his writings. The social features of Dr. White's make-up, and his absolute honesty of purpose and expression, gave a delightful charm to intercourse with him. He was always the earnest, thoughtful, but genial and accomplished gentleman; a keen reasoner, quick at repartee, full of witty sallies, and an uncompromising foe of humbugs in every shape; he was a rare conversationalist, — the best of company. Although of strong political convictions, which he never disguised, he held the universal respect and love of the citizens of New Orleans, even in times when the prevailing political sentiment was opposed to his; and this was maintained indeed, even during the days of violence and war.

Though not unexpected the announcement of Dr. White's death brought genuine mourning and sorrow to the city so long his home, and to the legion of friends he possessed all over this and other lands. The press of the country voiced the general sense of loss, and that of his own city paid the highest but well-deserved tributes to his character and work. The New Orleans Sanitary Auxiliary Association, of which he was the

mainspring and the Sanitary Director, and whose power was largely achieved through him, most deeply felt and mourned his loss, — to them well-nigh irreparable.

The following, from the New Orleans *Picayune* of April 21, attests their appreciation and grief: —

At one o'clock yesterday there was a meeting of the Auxiliary Sanitary Association, called to take action regarding the death of the late medical director of that body.

Mr. Charles A. Whitney, President of the Association, called the members together and addressed them as follows: —

"GENTLEMEN, — We are met to do the last honors permitted us to the memory of a good citizen, an able physician, and a noble man. The death of Dr. White is a real calamity to the community, and an irreparable loss to this Association. If, as a sanitary association, we have been able to accomplish desirable results and inspire the people with any degree of confidence, it has been largely due to the efficient effort and direction of our lamented friend whose untimely death we are now called upon collectively and as individuals to mourn. For his bereaved relatives and friends our hearts beat as one; but no words my lips can frame will serve to assuage the grief that has stricken them. It is most fitting, however, that we should manifest to them that sympathy which our presence in a body can give at the last solemn rites about to be tendered to our departed friend. As your executive officer, I therefore invite you to accompany me to his late residence for the purpose of joining in the funeral ceremony."

The members of the Association then in a body walked to 188 Canal street, the late residence of Dr. White, and, after the funeral ceremonies, accompanied the remains to the Jackson railroad depot, where the body was placed upon the cars *en route* to its final resting-place in the tomb of his father, Crawfordsville, Indiana.

The following, from the remarks of the Rev. Dr. Hugh Miller Thompson, indicate the feelings of love and reverence in which Dr. White was widely held, and fittingly sum up his life and character: —

. . The more I knew of the man the more I found in him to admire and even love. His intellect was clear, his power of vivid statement of his thought, extraordinary. He had a vast aptitude for administration, and was a very glutton for work; indeed he worked to the very last, though weak and suffering from repeated hemorrhage, and, as a scientific physician, knowing well that the inevitable end was at the door.

Some time since Dr. White sent for me to visit him as a clergyman. I found him hard at work as usual, his life ruled, however, by the strictest order, to prolong the daylight for the work's sake while nature held out. He was weak and worn, but pushed his papers aside and turned to greet me with cheerfulness. We had a frank talk; he told me of his early days, and pointed to the portrait of his father, a distinguished Presbyterian clergyman, looking down upon him from the wall with a look of earnest affection. I saw him afterwards and had free and full interchange of opinion and sentiment on the loftiest themes again.

. . We gathered "round his open coffin" the other day, old friends and new, and strong men's eyes were dim, women cried, and little children wept. And we looked our last upon the dead face of a stainless gentleman, a man of clean hands and a pure heart, and I said, according to my office, the Christian words of faith and hope over his coffin, in full assurance that a Christian soul, after all bewilder-

ment in the dust and dimness of time, had passed, enlightened, into the eternal daylight.

And now all doubts are made clear, and somewhere, in a life other than ours, he is alive, and, I doubt not, fulfilling high uses and helping on God's purposes of cleansing and redeeming the universe. I cannot think of him as dead or idle. The force that controlled that feeble body and made itself felt as a blessing to thousands has not perished; no force does, least of all spiritual force.

We speak of our dead associate lovingly and reverently. He deserved it, and that we keep his memory green for an example. This for our own sake, not his. It is all one to him in the larger intelligence, and the clearer vision, and the purer motives of the Life Eternal.

Benjamin Franklin Gibbs, Medical Inspector U.S. Navy, was born at Juliustown, N.J., the 18th of August, 1836. He was the second son of Benjamin and Anna Maria Foot Gibbs. His father was a Methodist clergyman, and his mother, the sister of Governor George Foot, of New Jersey, was of Quaker parentage. The mother died during his infancy, and his father died when Dr. Gibbs was about eighteen years of age. Young Gibbs received a classical education, and it was the intention of his father that the son should study engineering, and at an early date he was placed in a machine-shop. Not relishing this pursuit nor the prospect, he turned his attention to the study of medicine, enrolling himself as a student under the tuition of his uncle, a graduate in medicine, and at the time governor of New Jersey. Dr. Gibbs graduated from the University of Pennsylvania in 1857, and entered the naval service in 1858. He served in the Paraguay expedition, in the East Indies, and Pacific stations, and during the civil war was attached to the West Gulf Squadron under Admiral Farragut, and was in the action at Mobile. He was at times a member of the Examining Boards for the admission of candidates to the Medical Corps of the navy, and for the retirement and promotion of officers. The early studies in the machine-shop were usefully applied by Dr. Gibbs in his medical career. He invented an apparatus for the admeasurement of the limbs in fractures of the thigh, made several improvements in cowls for the ventilation of vessels, modified the ordinary wind-sail, invented a swinging-berth, etc. Nor was he idle with his pen. He gave an account of the yellow-fever epidemic of 1862 at Pensacola, Florida; suggested a method of examining the air of the holds of vessels, and contributed several short sketches upon hygiene as applied to the naval service. Dr. Gibbs was a man of good presence, about five feet eleven inches in height, and weighing about one hundred and eighty pounds. He died at Trieste, Sept. 9, 1882, of acute nephritis, whilst on duty as Surgeon of the Fleet of the European Squadron. Dr. Gibbs married the only daughter of Dr. George Kellogg, of New Orleans. Dr. Gibbs was a brave, generous, big-hearted gentleman, temperate in all things, and endeared himself to all those with whom he became associated. He leaves a widow and two children to mourn the loss of a kind and tender husband and a loving father. His remains are at rest in Oak Hill Cemetery, at Washington, D.C.

WILLIAM HEBERDEN MUSSEY, M.D., was born in Hanover, N.H., Sept. 30, 1818. Of English descent on his mother's side, and of Huguenot blood on that of his father, he was the rich inheritor of noble qualities from an heroic ancestry. He received an academic education in his native State. His father, Reuben D. Mussey, M.D., LL. D., was called from his Eastern home to fill the chair of surgery in the Ohio Medical College in 1838, being at that time fifty-eight years old. This position he held for fourteen years, when he assisted in forming the Miami Medical College, where he remained one of the Faculty for five years, when he removed to Boston, Mass., and died in a peaceful old age in 1866.

When Dr. Mussey settled in Cincinnati, William was twenty years old. After a few years of mercantile life, not at all suited to his ambition, he engaged in the study of medicine, under the guidance of his father, and graduated in the spring of 1848. He remained in a busy practice with his father till the spring of 1852, when he went to Europe and spent nearly two years in a more thorough prosecution of his medical studies. While in Paris he was elected President of the American Medical Society of that city.

After performing faithful work in the hospitals of Europe he returned to Cincinnati in 1853, when he entered at once into an active practice, having associated himself with Dr. Wm. Clendenin. On the breaking out of the war, in 1861, he took an active interest in all efforts to ameliorate the condition of the sick and wounded soldiers, and by his aid the Cincinnati branch of the Sanitary Commission was set in active operation.

In 1863 Dr. Mussey was appointed one of the surgeons of the Cincinnati Hospital, a position which he filled to the time of his death with his accustomed fidelity. In 1864 he was elected Vice-President of the American Medical Association, and in the same year was made Surgeon-General of the State of Ohio. In 1865 he was appointed to the chair of surgery in the Miami Medical College and held the position while he lived.

The busy demands of an active practice did not absorb all his time. He was greatly interested in the Society of Natural History, and contributed many valuable specimens to its museum. At a great sacrifice of time and money he collected and contributed a large and valuable collection of books to the Public Library of Cincinnati. At the time of his death he was busy in fitting up and rearranging the museum of the Cincinnati Hospital, in which he took great delight.

Approving everything that made men's lives happier and better, he became much interested in sanitary matters, and in 1878 joined the American Public Health Association, in order that he might be in line with the most advanced ideas on that subject, continuing a member till he died.

The professional, literary, and social work achieved by Dr. Mussey in thirty years was remarkable. *Honesty and directness were the distinguishing features of his life.* Conscientious carefulness was the rule, both private and professional. He was thoroughly devoted to his

patients, and his care after treatment was as much the secret of his success in surgery as his accuracy of diagnosis and skilful use of the knife. His cheerful devotion to his suffering wife for so many years, and his utter forgetfulness of himself in all the tender ties that bound the family together, will never be forgotten by his intimate friends. He belonged to the faithful few that help to leaven the lump of selfish humanity in the world. He was an earnest, sincere Christian, and carried the spirit of his Master in all the walks of his busy life. He was too busy in the discharge of his daily duties to get *ready to die*, but he was always *ready to live*, so that death was but an episode; not the end, but the beginning. He fell at his post in the midst of health, with the suddenness of the lightning flash; but the last sign given was, "All is well." We do ourselves honor in our remembrance of him; and the recollection of his acquaintance will continue to be a source of satisfaction and pleasure.

During the year we have also to mourn the loss of Dr. J. Foster Jenkins, of Yonkers, N.Y., who became a member of the Association in 1875. He had been out of health for the past four or five years, but formerly he was an active member of the Association.[1]

Wilson Glover, Esq., of Charleston, S.C., who became a member of this Association in 1881, was killed by lightning at his home in that city in the summer of 1882. He was a gentleman of the highest character, and well known in Charleston as an active member of an important business firm.

Mr. Glover became some years since earnestly interested in sanitary matters, especially the removal and conservation of sewage. Recognizing especially the need of the South, where sewerage is often difficult of construction and not available, for better methods for the care, removal, and utilization of excreta, he produced, after much study of the subject, terra-cotta cylinders as substitutes for vaults and cesspools, to be placed above ground, their contents to be systematically disinfected, removed by pneumatic force, and used as fertilizers. He had achieved a good degree of success in his own city, and was proposing to extend his efforts when so suddenly removed by death. He was a man of quiet force of character, prompt, just, and courteous in all his relations in life. His interest in sanitary matters led him to seek the membership of the Association for knowledge, and it is probable that he would have given full return for what he received.

Azel Ames, Jr.,
J. L. Cabell,
E. M. Hunt,
J. Berrien Lindsley,
J. G. Thomas,
Committee on Necrology.

[1] A full obituary failed to reach me in time for the present volume, but will be supplied for the next. — Secretary.

ANNUAL REPORT OF Dr. J. BERRIEN LINDSLEY,

Nashville, Tennessee, Treasurer of the American Public Health Association, October, 1882.

RECEIPTS.

Balance brought forward	$812 67	
Received from sale of *Public Health*	126 00	
Received for dues from members, as per lists in my hands and per Treasurer's book	1,900 00	
Total		$2,838 67

DISBURSEMENTS.

Stenographer and printing	$92 50	
Secretary's travelling expenses	134 25	
Treasurer's travelling expenses	121 00	
Secretary's printing, stationery, and postage, in part,	86 99	
Treasurer's printing, stationery, and postage	91 68	
Expenses connected with former volumes	33 31	
		559 73
Cash on hand		$2,278 94

The above expenditures were ordered by the Executive Committee, and vouchers for the same are herewith submitted.

J. Berrien Lindsley, *Treas.*

Indianapolis, Oct. 19, 1882.

To the President of the A. P. H. Association: —

Sir, — The undersigned, an Auditing Committee appointed to audit the Treasurer's account for the year ending Oct. 17, 1882, respectfully report that they have examined the vouchers and find the same correct.

C. W. Wight, *Chairman.*
J. H. Raymond.
W. S. Robinson.

CONSTITUTION

OF THE

AMERICAN PUBLIC HEALTH ASSOCIATION.

TITLE.

I. This Association shall be called "THE AMERICAN PUBLIC HEALTH ASSOCIATION."

OBJECT.

II. The objects of this Association shall be the advancement of sanitary science and the promotion of organizations and measures for the practical application of public hygiene.

MEMBERS.

III. The members of this Association shall be known as Active and Associate. The Executive Committee shall determine for which class a candidate shall be proposed. The *Active* members shall constitute the permanent body of the Association, subject to the provisions of the constitution as to continuance in membership. They shall be selected with special reference to their acknowledged interest in, or devotion to, sanitary studies and allied sciences, and to the practical application of the same. The *Associate* members shall be elected with special reference to their general interest only in sanitary science, and shall have all the privileges and publications of the Association, but shall not be entitled to vote. All members shall be elected as follows: —

Each candidate for admission shall first be proposed to the Executive Committee, in writing (which may be done at any time), with a statement of the business or profession, and special qualifications of the person so proposed; on recommendation of a majority of the committee, and on receiving a vote of two-thirds of the members present at a regular meeting, the candidate shall be declared duly elected a member of the Association. The annual fee of membership in either class shall be five dollars.

OFFICERS.

IV. The officers shall be a President, a First and Second Vice-President, a Secretary, and a Treasurer.

All the officers shall be elected by ballot, annually, except the Secretary, who shall be elected for a term of three years.

PRESIDING OFFICER.

V. The President, or, in his absence, one of the Vice-Presidents, or, in their absence, a Chairman *pro tempore*, shall preside at all meetings of the Association. He shall preserve order, and shall decide all questions of order, subject to appeal to the Association. He shall also appoint all committees authorized by the Association, unless otherwise specially ordered.

SECRETARY.

VI. The Secretary shall have charge of the Correspondence and Records of the Association; and he shall also perform the duties of Librarian. He, together with the presiding officer, shall certify all acts of the Association. He shall, under the direction of the Executive Committee, give due notice of the time and place of all meetings of the Association, and attend the same. He shall keep fair and accurate records of all the proceedings and orders of the Association; and shall give notice to the several officers, and to the Executive and other Committees, of all votes, orders, resolves, and proceedings of the Association, affecting them or appertaining to their respective duties.

TREASURER.

VII. The Treasurer shall collect and take charge of the funds and securities of the Association. Out of these funds he shall pay such sums only as may be ordered by the Association, or by the Executive Committee. He shall keep a true account of his receipts and payments; and, at each annual meeting, render the same to the Association, when a committee shall be appointed to audit his accounts. If from the annual report of the Treasurer there shall appear to be a balance against the treasury, no appropriation of money shall be made for any object but the necessary current expenses of the Association, until such balance shall be paid.

COMMITTEE.

VIII. There shall be a Standing Committee, to be known as "The Executive Committee," which shall consist of the President, the First Vice-President, Second Vice-President, Secretary, and Treasurer, and six members annually elected by ballot.

All committees, and all members preparing scientific reports or papers to be laid before the Association, at its annual meetings, must give, in writing, the title of such reports or papers, the time to be occupied in reading them, and an abstract of their contents, to the Executive Committee, at least one week preceding the date of such meeting, to secure their announcement in the order of business.

EXECUTIVE COMMITTEE.

IX. It shall be the duty of the Executive Committee to consider and recommend plans for promoting the objects of the Association; to author-

ize the disbursement and expenditure of unappropriated moneys in the treasury for the payment of current expenses; to consider all applications for membership, and, at the regular meetings, report the names of such candidates as a majority shall approve; and, generally, to superintend the interests of the Association, and execute all such duties as may, from time to time, be committed to them by the Association. At least one month preceding the annual meeting of the Association, the Executive Committee shall cause to be issued to members a notice of such meeting, and they are authorized to publish the same in medical, scientific, and other periodicals, but without expense to the Association; such notice shall contain the order of business to be followed at said meeting, and, briefly, the subjects to be presented, and the special points of discussion.

MEETINGS.

X. The time and place of each annual meeting shall be fixed at the preceding annual meeting, but may be changed by the Executive Committee for reasons that shall be specified in the announcement of the meeting. Special meetings may be called, at any time or place, by concurrence of two-thirds of the Executive Committee. There shall be no election of officers, or change of By-laws, or appropriation of money to exceed the amount at that time in the treasury, at such special meeting, except by a vote of a majority of all the members of the Association. Whenever a special meeting is to be held, at least one month's notice shall, if possible, be given by circular, to all the members, together with the order of business.

QUORUM.

XI. At the annual meeting nine members shall constitute a quorum for the election of officers, a change of the Constitution, the election of members, and the appropriation of moneys.

ORDER OF BUSINESS.

XII. The order of business at all meetings of the Association shall be fixed by the Executive Committee, and such order must be completed before any other business is introduced, except such order of business is suspended by a vote of four-fifths present.

ALTERATION OF CONSTITUTION.

XIII. No alteration in the Constitution of the Association shall be made except at an annual meeting, and unless such alteration shall have been proposed at a previous meeting, and entered on the minutes with the name of the member proposing the same, and shall be adopted by a vote of two-thirds of the members present.

OFFICERS AND COMMITTEES

OF

THE AMERICAN PUBLIC HEALTH ASSOCIATION.

ORGANIZATION 1882–1883.

President . . . . . Dr. EZRA M. HUNT, Trenton, N.J.
First Vice-President . . . Dr. ALBERT L. GIHON, U.S.N., Washington, D.C.
Second Vice-President . . Dr. JAMES E. REEVES, Wheeling, W. Va.
Secretary . . . . . Dr. AZEL AMES, JR., Wakefield, Mass.
Treasurer . . . . . Dr. J. BERRIEN LINDSLEY, Nashville, Tenn.

STANDING COMMITTEES.

EXECUTIVE COMMITTEE.

(Elective.)

Dr. THOMAS L. NEAL . . . . . Dayton, Ohio.
Dr. G. P. CONN . . . . . Concord, N.H.
Dr. JOHN J. SPEED . . . . . Louisville, Ky.
Dr. THOS. J. TURNER, U.S.N. . . . . Washington, D.C.
Dr. J. S. BILLINGS, U.S.A. . . . . Washington, D.C.
Dr. H. D. FRASER . . . . . Charleston, S.C.

ADVISORY COUNCIL.

The President and Secretary, *ex officiis*.

Alabama . . . . . Dr. R. D. WEBB, *Livingston*.
Arkanaas . . . . . Dr. D. H. DUNGAN, *Little Rock*.
California . . . . . Dr. F. W. HATCH, *Sacramento*.
Colorado . . . . . Dr. CHAS. AMBROOK, *Boulder*.
Connecticut . . . . . Dr. C. W. CHAMBERLAIN, *Hartford*.
Delaware . . . . . Dr. L. P. BUSH, *Wilmington*.
Florida . . . . . Dr. ROBT. B. S. HARGIS, *Pensacola*.
Georgia . . . . . Dr. W. H. ELLIOTT, *Savannah*.
Illinois . . . . . Dr. HOSMER A. JOHNSON, *Chicago*.
Indiana . . . . . Dr. J. W. COMPTON, *Evansville*.
Iowa . . . . . Dr. W. S. ROBERTSON, *Muscatine*.
Kentucky . . . . . Dr. WM. BAILEY, *Louisville*.
Louisiana . . . . . Dr. S. S. HERRICK, *New Orleans*.
Maine . . . . . Dr. JOHN T. GILMAN, *Portland*.
Maryland . . . . . Dr. GEORGE H. ROHÉ, *Baltimore*.

Massachusetts	Dr. Henry P. Walcott, *Cambridge.*
Michigan	Dr. Henry B. Baker, *Lansing.*
Minnesota	Dr. D. W. Hand, *St. Paul.*
Mississippi	Dr. Wirt Johnson, *Jackson.*
Missouri	Dr. W. B. Conery, *St. Louis.*
New Hampshire	Dr. Irving A. Watson, *Concord.*
New Jersey	Dr. D. C. English, *New Brunswick.*
New York	Dr. Jos. H. Raymond, *Brooklyn.*
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